

## ARCHIVES OF OTOLOGY.

A TUMOR OF THE MIDDLE EAR SPRINGING FROM THE INNER AND POSTERIOR TYMPANIC WALLS, SIMULATING EXOSTOSIS BUT CONSISTING OF CALCAREOUS LAMINÆ.<sup>1</sup>

(With 2 micro-photographs on Text-plate II.)

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I RECENTLY saw, in consultation with Dr. James Cole Hancock, a case which he regarded as one presenting unusual characteristics. The history of the patient is briefly as follows:

Miss E. G., thirty-five, has always enjoyed good health, and has never suffered from any attack of illness except scarlet fever, at twelve years of age, since which time there has been a discharge from both ears. This has been so slight as only to attract her occasional notice.

Recently, however, her attention has been drawn to the left ear, by reason of an occasional beating tinnitus, and by a change in the character of the discharge, which has become much more abundant than formerly and of a thin, watery consistency.

The right *Mt* presented a large perforation involving the entire anterior half and lower portion. Thick inspissated pus covered the floor of the canal.

The *left Mt* on first inspection was hidden by a rather thin, watery muco-pus. After drying this out, an unusual appearance presented itself. The entire membrane was wanting, but the cavity of the middle ear was almost entirely occupied by a smooth, glistening, pinkish-white, clearly outlined excrescence, which, on careful inspection, was observed to spring from a base entirely

<sup>1</sup> Read at a meeting of the Brooklyn Pathological Society, October 10, 1901.

within the annulus tympanicus. A light probe glided readily over the growth; there was no grating under the probe, and the growth appeared to be everywhere covered with living membrane, the probe coming to rest along its entire periphery within the tympanic ring and at its posterior and inferior aspects very close to the latter.

Its attachment covered the posterior two-thirds of the inner wall of the drum cavity and almost the entire posterior walls, encroaching upon the *aditus ad antrum*, a discharge from which flowed over its surface.

It obliterated the landmarks of the tympanum, such as the promontory and round window, and was overridden by the handle of the malleus which it appeared to have pushed upward and outward. The malleus was ankylosed and immovable. The mass was attached by a broad base. It presented the appearance of a smooth bony growth springing from the middle-ear structures and covered with normal membrane. The inference drawn from the history and examination was that it was increasing in size, and encroaching upon a narrowed aditus which was discharging pus, and an opinion was rendered that an early operation would be a necessary and prudent measure.

September 10, 1900, *Operation* under ether was done with the assistance of Drs. J. C. Hancock, and B. C. Collins. A solution of suprarenal extract was used locally to control bleeding, with very gratifying result.

It was our supposition that the mass would be found of a hard and unyielding consistency and that the force of the concussions of the gouge and mallet in the immediate vicinity of the underlying cochlea and vestibule would create considerable shock and perhaps temporary disturbance of equilibrium. The patient was therefore forewarned of the probable result.

An agreeable surprise was encountered in the ease with which the mass yielded to the attack. A small gouge pierced the mass under the first moderate taps of a light mallet. The finger holding the cutting instrument easily detected the entrance of the instrument as the thin shell gave way, which then, after careful dissection with the curette and use of the forceps, was entirely removed in fragments, leaving the tympanum with its normal cavity re-established and its landmarks *in situ*. The ossicles were ankylosed *en masse* and were not removed, except the tip of the manubrium.

The fragments re-constructed showed a thin, convex shell, of bone-like consistency, with a transverse diameter of about  $\frac{1}{4}$  of an inch; smooth on its convex or outer, and rough on its concave or inner aspect.

No event of importance followed the operation. The discharge has almost entirely disappeared.

The most prominent portion of the mass was submitted to Dr. Archibald Murray, for microscopical examination and reference to a micro-photograph of a typical section will reveal its microscopic appearance. Dr. Murray's report was as follows:

"In examining the small mass from the ear I find no evidence of true bone formation. The piece was very hard and had to be decalcified, and under the microscope shows a laminated structure which has been the seat of a calcareous deposit. The dark purple areas represent incomplete decalcification. Small masses of cartilage are seen in some places."

The section from which the micro-photograph is made has been cut vertically to the plane of its long axis. The smooth edge represents the outer, and the rough, the inner surface of the growth.

The specimen under consideration, from which the sections were made, is apparently a calcareous degeneration of some previously existing growth in the middle ear. Its peculiar appearance under the microscope is most easily accounted for by supposing the first condition to have been a fibroma (fibromatous polyp).

Calcareous degeneration of middle-ear tumors, of hyperplasias, and of polypoid granulation have, I believe, previously escaped notice. It would therefore seem that growths in the middle-ear cavity which have become the seat of calcareous deposit are rare.

THE MICROSCOPE AS AN AID TO DIAGNOSIS  
AND PROGNOSIS IN CHRONIC SUPPURA-  
TIONS OF THE MIDDLE EAR.

BY E. F. SNYDACKER, M.D., CHICAGO.

(With two text-illustrations.)

THE microscopic examination of the centrifuged washings from the middle ear not infrequently proves of great value as an aid to diagnosis and prognosis in chronic cases of suppurative middle-ear disease.

For over a year, I have made it a routine practice to examine microscopically the sediment of the washings from the middle ear in all such cases where the discharge has continued a year or over, and out of a very limited clinical material (13 cases in all) there were three where the microscopic findings caused me to materially change my views as to the treatment and outcome of the case. When one can convince himself that *epidermis is present in the washings, and has undoubtedly come from the middle ear*, whether it presents the concentric arrangement, containing fat and cholesterol crystals typical of cholesteatoma, or whether it is merely present in shreds showing no signs of concentric arrangement or of degeneration, *and when it persists, even after a rational treatment has been continued for a reasonable length of time*, it is a symptom no more to be ignored than the presence of albumen or casts in the urine. And while I do not at all agree with Bezold<sup>1</sup> when he says, "The smallest shreds of epidermis, if it can be shown that they have come

<sup>1</sup> *Überschau über den gegenwärtigen Stand der Ohrenheilk.*, Wiesbaden, 1895, p. 119. Blau, "Bericht über die neueren Leistungen in der Ohrenheilkunde" (*Schmidt's Jahrbücher der gesamten Medicin*, 1897, p. 189), quotes Bezold and gives reference.



from the middle-ear spaces, suffice to make the diagnosis of cholesteatoma," nevertheless I do believe their continual presence in the discharge is a symptom which must be taken seriously.

Another microscopical finding which must be considered of the greatest importance, irrespective of the clinical aspect of the case, is the *continuous presence of bone dust in the sediment*, and the greater the amount the more is the importance of the finding. I have never been able to convince myself that a bacteriological examination of the middle-ear discharges was of any value whatever in determining the outcome of a case. The presence of tubercle bacilli, if demonstrated, would, of course, materially affect the treatment and prognosis of a case, but their demonstrable presence, even in cases which are manifestly tuberculous, is so rare and uncertain that their absence means but little.<sup>1</sup>

Blau<sup>2</sup> ascribes importance to the presence of *cholesterin crystals in the discharge*, even though no epidermis is present.

My experience does not bear out this assertion; in two cases which have come under my observation, in both of which the discharge had become stagnant and offensive because of insufficient drainage, cholesterin crystals were present in considerable quantities, in one case associated with small quantities of epidermis, in the other case no epidermis was present; in both cases, when the middle ear was thoroughly cleaned out and proper drainage instituted the cholesterin crystals promptly disappeared.

Inasmuch as the method of treatment, as well as that for examining the washings microscopically was the same in all the cases which I am about to describe, it will avoid repetition to describe these methods of procedure before entering on a detailed account of each case.

The treatment of all of these chronic suppurative cases consisted in the thorough irrigation of the tympanic cavity with a sterilized solution of boracic acid. The frequency of irrigation varied according to the nature and amount of the

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<sup>1</sup> Grunert, *Arch. f. Ohren.*, xl., 3 and 4, 1897

<sup>2</sup> *Berl. klin. Wochenschr.*, xxxiii., 2, 1896.

discharge; in some instances it was not carried out more than once a week, in others it was repeated three times a week. The irrigation was conducted in the usual manner, by means of a tympanic canula, with the point bent at a suitable angle, according to the nature of the perforation. This was introduced into the middle ear with the tip pointing toward the attic and the tympanic cavity well irrigated. The ear was then thoroughly dried by wiping with absorbent cotton, and instilling 95 per cent. alcohol as long as the patient could bear it with comfort; after which a current of air was blown into the ear. A gauze drain was then inserted.

Each patient was given a number of sterilized cotton plugs which were kept in a wide-mouthed bottle, that had been rendered aseptic by washing well with alcohol. The patient was instructed to buy a small pair of forceps, whose points were to be dipped in alcohol each time before using. When the gauze drain in the ear became saturated it was removed by the patient or one of the family, a cotton plug picked from the bottle with the forceps, and without handling with the finger introduced into the auditory meatus, and left there till it became saturated. The washings were examined microscopically in the following ways: The external auditory meatus was first thoroughly cleansed so that I could feel certain that the sediment in the washings came from the middle ear alone and none of it from the meatus.

Portions of the washings which seemed to contain the most sediment were centrifuged, and the sediment was examined in the following manner: One drop was placed on a slide and examined immediately without staining; cholesterin crystals and epidermis could be easily identified in this manner; to another portion of the sediment a drop of picro-carmin was added, it was then spread on a slide and examined microscopically. For detecting particles of bone the following method gave the best results: some of the dried sediment was fixed on a slide with albumen fixative, stained with hæmatoxylin and eosin, dehydrated with alcohol, cleared with carboxylol, and mounted in Canada balsam.

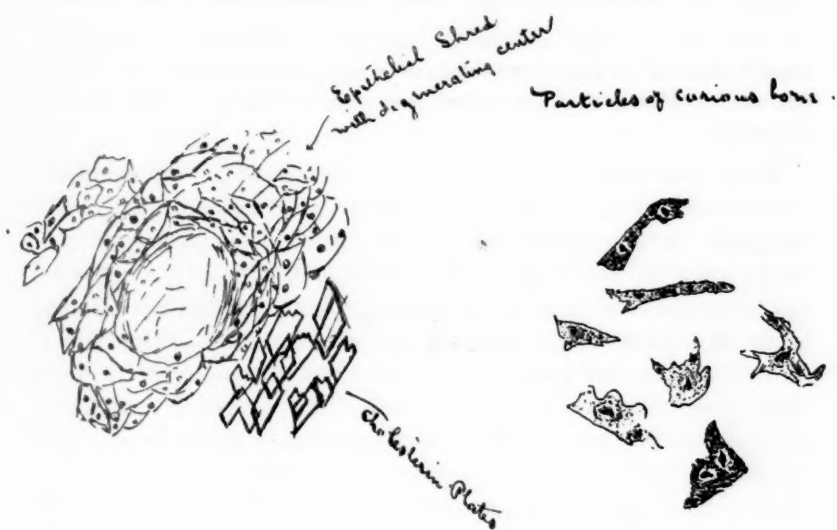
In the following three cases the microscopical findings

were deemed of enough importance to materially influence the treatment and prognosis of the case.

CASE NO. 1.—**Chronic otorrhœa; cholesterin, epidermis, and bone dust in the discharge.** After two months' treatment, bone dust still present. Operation not consented to. Patient dismissed.

John C., Irish boy, aged thirteen; father and mother alive and well; a sister aged nine has had a discharging ear which at present is well; two brothers died when young, cause of their death unknown, although inquiry elicited that one had had a discharging sore in the neck, probably due to suppurating glands.

The patient himself has had measles, diphtheria, and grippe. Four years ago while he had measles the ear began to discharge: it discharged for about one year and then became apparently well, although no treatment was instituted at any time; it continued well for about six months when patient contracted diphtheria; the ear at that time again began to discharge and the discharge has continued up to the present time.



*Present Condition.*—Patient is pale and listless, though of good frame and weight. On the entrance of the patient a disagreeable odor became apparent. The meatus was filled with

offensive brownish pus: when the canal had been cleaned a large perforation was found in the posterior inferior quadrant of the drum membrane which in one place extended as far as the annulus. The tympanic mucous membrane was seen to be intensely red and swollen, no granulations or polypi, however, could be seen. No denuded areas of bone or fistula could be found with probe. Thorough irrigation of the tympanic cavity brought away a large amount of foul-smelling debris in which, on microscopic examination, were found quantities of cholesterol crystals, masses of epidermis, and fine particles of disintegrated bone. See figures, p. 469. After one month's treatment, the ear was still discharging freely, although the odor had entirely disappeared and neither cholesterol crystals nor epidermis could be found in the discharge; bone dust was, however, still present in the sediment. The same treatment was continued four weeks longer without material change; at the end of that time bone particles were still present in the sediment. An operation was now strongly advised and as the mother refused to consent to an operation I declined to treat the case longer and lost sight of it.

**CASE NO. 2.—Old otorrhœa; offensive discharge containing round masses of horny epithelium, some concentrically arranged fat and cholesterol. Operation not consented to. Patient not accepted.**

Mary G.—aged twenty-six, a cook, strong, red-cheeked, healthy-looking girl, comes because of a long-continued supuration in the right ear. The trouble began in childhood, after an attack of scarlet fever; at that time both ears discharged, but after a while discharge from the left ear ceased, while that of the right ear has continued to the present time. Family history and general health are good, although patient finds that a hard day's work tires her more than it formerly did, and several times in the past six months she has had headaches from which she had never suffered in previous years.

*Present Condition.*—The meatus of the right ear is filled with a scanty, greenish, offensive pus and crusts. The drum membrane is red and thickened, with a large kidney-shaped defect around the hammer handle; a partial synechia between drum membrane and inner tympanic wall prevented free exploration with a probe. Irrigation of the middle ear brought away much debris from the tympanic cavity, in which were a number of small round masses, some of them having a lustre when straightened

out, and several of them of such a size that it seemed remarkable how they had made their way through the perforation in the drum membrane.

Microscopic examination showed that these masses consisted of horny, squamous, epithelial cells, in many cases concentrically arranged around a small mass of debris, the cells themselves taking a diffuse stain, showing but few nuclei, containing in many instances fat and cholesterol crystals; usually the boundary between the individual cells was well marked, but at times there were areas which showed a diffuse yellow tinge, where demarcation between individual cells was lost.

I thought this finding of sufficient importance to advise immediate operation; this, however, the patient refused. At the end of the third week the patient no longer returned to my clinic, and I lost sight of the case, no second microscopic examination of the sediment having been made.

**CASE NO. 3.—Otorrhœa in childhood. Started again three years ago. Discharge containing shreds of epidermis in the sediment; no crystals; traces of bone dust. Topical treatment six weeks. Bone dust disappeared. Operation refused. Patient lost sight of.**

Yetta C., æt. 17. Family history is negative. General health bad. Patient is subject to severe headaches, which have, however, not grown worse since ear trouble started. She has dysmenorrhœa and at times amenorrhœa. She is pale and anæmic and her face is covered with acne vulgaris.

The left ear started to discharge about three years ago. She does not remember being ill at the time, although there was some pain in the ear at night and next morning it was discharging. She believes that both ears discharged when she was a child.

*Present Condition.*—Meatus of left ear is filled with a scanty yellowish-white discharge and crusts. The discharge has no bad odor. In the superior-posterior quadrant, reaching almost as high as the posterior fold and in one place extending to the annulus, is a large perforation. At the outer edge of the perforation are several granulations, about the size of pin-heads.

Microscopic examination of the washings revealed shreds of epidermis in the sediment, no crystals, a trace of bone dust. The shreds of epidermis consisted of masses of large squamous epithelial cells, many of them showing no nuclei, many of them having undergone keratosis, but in most instances the boundaries of the cells were well defined.



The drainage in this case being good and the discharge scanty, but few irrigations were employed; the treatment consisted mainly of the instillation of an alcoholic solution of boric acid, and drainage by means of gauze drains inserted by myself, and cotton ones inserted by the patient. At the end of six weeks epidermis shreds were still present in the discharge, although no bone dust could be found. Operation was urged, but in this case too the patient refused an operation, and I soon lost sight of the case.

In these three cases, especially when treatment lasting from one to two months had proven of no avail, in my judgment, the microscopic findings warranted a radical operation. Where the symptoms are not urgent the patient will almost invariably refuse an operation, but to continue a long course of treatment, in the face of such findings, is to run the constant risk of very serious complications, and to my mind it is far better to refuse to treat the case further, where an operation is refused, than to enter on a long and tedious course of treatment which will in all probability end in disaster. It must not, however, be forgotten that after a long-continued suppuration of the middle ear the mucous membrane becomes denuded in places, and such surfaces may by a reparative process become clothed with epidermis, an outcome which may be entirely favorable, and, far from indicating cholesteatomatous formation in the middle ear, is one means which nature has devised of effecting a cure. It is only when the discharge persists after this epidermis formation has begun, when by its constant irritating contact it causes over-production of epidermis, and this is constantly cast off, as is shown by its continual presence in the discharge, that its production must be regarded as a dangerous symptom. One cannot, therefore, on a single finding of epidermis shreds, make a diagnosis of cholesteatoma or advise an immediate operation; it is only when these shreds are present and the discharge persists for weeks, and even months, that it is safe to regard them as a danger sign. It is otherwise, however, when the process has gone so far that the epidermis presents the concentric arrangement known as cholesteatoma. When we can convince ourselves that



cholesteatomatous masses are present, all delay is detrimental to the best interests of the patient, and it is far better to give up the case at once, than to enter on a fruitless and dangerous treatment.

As to the indications when bone dust is present, there may be a difference of opinion: if the carious bone has its source in the ossicles, and the tympanic walls and mastoid cells are intact, then there can be no danger in delay. When, however, we remember the findings of Grunert (*Arch. f. Ohrenh.*, xl., 3 u. 4, p. 189, 1896), who in 108 cases of caries of the middle ear found only two where the ossicles alone were involved, while either the tympanic walls or mastoid cells were involved in all the other cases, we must agree that where carious bone is present in the discharge, and persists after thorough treatment has been instituted, a radical operation is surely the most conservative course.

A CASE OF MENINGITIS FROM EXTENSION OF ACUTE  
PURULENT OTITIS MEDIA THROUGH OSTEOMY-  
ELITIS OF THE PETROUS BONE. OPERATION.  
AUTOPSY. MICROSCOPIC EXAMINATION.

By DR. ARNOLD KNAPP.<sup>1</sup>

Mrs. B. S., thirty-one years old, was first seen on February 6, 1901. She had been taken ill six days previous with severe pain in the left ear followed by bloody discharge and profuse otorrhœa during the last two days. The patient is otherwise in good health, except that she is suffering from some pelvic disorder which gives rise to a chill and high fever at irregular intervals. The canal is inflamed, there is a large perforation, and the mastoid is red and very tender. Temperature 100°, pulse 120. There is no sagging of the superior wall.

She was put to bed and an ice-bag applied to the mastoid for thirty-six hours. The pain was thus relieved, but returned with renewed severity after the removal of the ice; the mastoid was especially tender directly over the mastoid fossa and along the posterior border. A free discharge continued. The upper wall did not sag. Temperature 99°.

*Operation.*—February 8th, the mastoid process was found very hyperæmic; there were some granulations in a few of the posterior cells. The antrum was small, very high up, and contained no pus. On the 9th of February a slight chill; temperature 102°. Her general condition then improved. There was no fever, no pain; discharge from the ear canal continued.

On the 16th she had a chill; temperature went up to 104°, pulse 120. On the following day the temperature was down

<sup>1</sup> Read at the meeting of the Otological Section N. Y. Acad. of Med., Nov. 13, 1901.

again, but the otorrhœa continued, and there was also some pus coming from the mastoid wound. No particular change until the 23d, when pain again set in due to a furuncle of the canal.

On the 27th the patient had another chill with high fever. Her condition otherwise was satisfactory, and she was allowed to go home on March 5th. Slight otorrhœa; mastoid fistula leading down to uncovered bone in the region of the antrum. She returned regularly for dressings. The discharge gradually grew less until March 17th, when she had a very severe chill, and was readmitted to the hospital on the following day. The discharge from the ear canal was again profuse; the wound in the back was closed and clean. Her temperature was  $102^{\circ}$ . She complained of being very deaf in that ear.

On the following day, the 19th, the profuse otorrhœa continued and the general condition seemed to be better until suddenly in the afternoon she complained of very severe pain in the left half of her head. She was restless and passed a poor night.

On March 20th, slight stupor; very severe pain in the head, back of neck, and back. Right pupil was dilated, slight ptosis, optic discs showed haziness in lower margins, vessels were tortuous, and there were a few retinal hemorrhages. Some delirium. Temperature had gradually gone up to  $103.8^{\circ}$ , pulse 125. At eight o'clock on that evening she was again operated on.

*Operation.*—The sinus was first exposed. The neighboring dura was found normal. The sinus was normal in appearance and to touch. There was free bleeding from the mastoid vein. The tegmen of the antrum and tympanum were then removed. The dura was everywhere found normal and the brain was punctured with a small knife in many directions without any result. The middle ear was filled with granulations and pus.

*March 21st.*—The patient is conscious but apathetic. There is right slight exophthalmus, severe headache, and great pain on rotating head. She complained of very great pain in the top of the head when her bowels were moving. The temperature remained high, about  $104^{\circ}$ , during all that day. Pulse 130. The patient can be aroused by speaking to her and takes nourishment. In the evening she became very restless and had a slight chill. The urine contained some blood and a great deal of albumen.

On the following days, March 22d and 23d, the patient grew gradually worse, hiccough and vomiting set in, she was restless and delirious, fæces and urine were voided involuntarily, and on

the morning of the 24th, after general convulsions, she died. The temperature during the last two days had remained constantly high, and the pulse between 100 and 120.

*Autopsy at 12 M.*—A horizontal incision was made through the brain. On lifting up the lower half, pus was encountered about the pituitary gland extending backward down to the clivus. The meninges of the cortex seemed normal. The sinuses contained fluid blood. The tentorium was incised and pus was found surrounding the left cerebellum, especially the upper, the anterior, and the outer surfaces. A tenacious, purulent membrane was found attached to the dura just back of the sigmoid sinus and another over that portion of the posterior surface of the petrous bone lying between the sinus and the internal auditory meatus. In the spinal canal there was a great quantity of purulent fluid. The cerebellum was normal. Cover-glass specimens of the fluid from the spinal canal revealed streptococci in long chains. The operative wound was clean except for some pus in the middle ear. The internal auditory meatus and the nerves seemed unchanged. On the posterior surface of the petrous portion, *at a point midway between the sigmoid sulcus and the internal auditory meatus, there was a well-defined, small, reddish swelling*, like a bunch of granulations, which seemed to be partly in and partly under the dura. This corresponded to the site of the ductus endolymphaticus, the end of the aqueduct of the vestibule. The petrous bone was removed and prepared for microscopic examination in horizontal serial sections.

*Microscopic Examination.*—The inner wall of the tympanum was the seat of an intense inflammation, the bone being superficially affected. The niche of the oval window was filled with inflammatory products. There seemed to be a minute perforation through the oval window. The stapes as such could not be identified. There was slight inflammatory involvement of the vestibule, especially of the perilymphatic spaces. This extended to the beginning of the eighth nerve and also partly along the external semicircular canal. The cochlea also was slightly affected, but the other semicircular canals, especially the posterior vertical, appeared normal.

Below the round window a fistulous tract measuring 2 mm in breadth extended in the cancellous bone below the labyrinth from the inner tympanic wall forward and inward for about 1 cm.

The cancellous bone inferior and posterior to the labyrinth was

the seat of an intense osteomyelitis. Resorption of bone had taken place, the intervening spaces were filled with inflammatory products. New bone and fibrous tissue were visible. An abscess had formed in the bony tissue, which, at one point situated near the posterior surface of the petrous bone corresponding to the macroscopic lesion found at autopsy, had distinctly broken through the cortex and invaded the dura. In successive lower sections this abscess was seen to gradually leave the proximity of the posterior petrous surface and the site of perforation and to assume a more central position underneath the labyrinth, where it communicated with the fistulous tract from the inner tympanic wall.

In the direction opposite to the site of perforation, the destructive inflammatory process could be seen to invade the condensed bony labyrinth wall near the posterior vertical semicircular canal, and would in time have invaded the latter structure, causing an involvement of the labyrinth.

From the findings at autopsy it seemed probable that the meningitis originated from the perforation visible to the naked eye at the posterior petrous surface. The connection of this perforation with the inflamed tympanum was made clear by the microscopic examination. A fistulous tract was discovered below the round window leading to an intense inflammatory focus, a beginning abscess, situated below and back of the labyrinth, which at the above-mentioned point had perforated through the cortex.

Similar osteomyelitic processes in the petrous bone have been observed as direct extensions from the inner wall of the antrum, from the cancellous structure on the inner wall of the tympanum above and below the labyrinth capsule, or from an infection of the labyrinth extending by perforation of a semicircular canal or along the aqueduct of the vestibule. Jansen, in an article "On Deep Extradural Abscesses in the Posterior Cranial Fossa Secondary to Labyrinth Suppuration" (*Arch. f. Ohrenhkl.*, vol. xxxv.), reports a case of acute otitis media where a fistulous tract was found just above the horizontal semicircular canal extending transversely inwards to an extradural abscess on the posterior surface of the petrous bone, at a point corresponding about to the conjoined

arms of the vertical canals; this tract communicated with the posterior vertical canal and the vestibule. He further states that perforation of the conjoined arms of the vertical canals is not very infrequent and significantly occurs in cases of acute otitis running a protracted course. Jansen has also observed cases where the pathological changes in the bone and dura have extended outwards, which under certain circumstances would be quite accessible to operation. The prominent symptom in these cases was one side headache in the forehead, eye, or occiput, which persisted after the opening of the mastoid process. This symptom was absent in our case.

Habermann<sup>1</sup> has described a number of cases of involvement of the petrous bone in acute purulent otitis with a most careful description of the microscopic changes found present. In some the entire petrous bone was affected, abscesses had formed in the bone, sometimes perforating through the adjoining surface of the petrous pyramid or into the labyrinthine structures; in others the chief changes were found in the cancellous tissue situated above and below the bony labyrinth.

The probability of the extension of the osteomyelitis from the inner tympanic wall to the structures above and below the labyrinth depends to a certain extent upon the presence of cancellous bone in these situations. If the intervening layer of bone between the middle cranial fossa and the labyrinth on one hand, and between the jugular bulb and the labyrinth on the other, be thin, it is usually compact and hard, thus furnishing a barrier to pyogenic extension in the bone. Especially in the region below the labyrinth, which is involved more frequently than the area above, great variations in the size and density of bone exist.

I was able to observe this spring, in Dr. Jansen's service, a case of infection of the cancellous structures below the labyrinth with a fistula passing through the petrous bone and emerging under the dura at a point interior to the internal auditory meatus.

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<sup>1</sup> Habermann, Ueber Erkrankung des Felsentheils und des Ohrlabyrinths infolge der acuten citrigen Mittelohrentzündung, *Arch f. Ohrenhkl.*, vol. xlii. p. 128.



It is stated that infection of the labyrinth is the most frequent complication of aural suppuration. According to Hinsberg, who has just published in the *Zeitschrift für Ohrenheilkunde*, vol. xl., p. 117, an admirable and exhaustive article on "Suppurations of the Labyrinth," the site of entrance of infection is generally the horizontal semicircular canal or the oval window. The former preponderating greatly in frequency over the latter, and occurring practically only in chronic cases. In our case the stapes was principally 'gone, there was a great deal of inflammatory tissue in the niche of the oval window, and a small perforation seemed to be present; the changes in the vestibule and canals were hardly sufficient to account for the bone lesion found near the posterior surface of the petrous bone. It is generally very difficult to gain much information as to the histological conditions found in suppurating labyrinths from the accounts in literature. Cases of clear infection through the labyrinth often have shown very few anatomical changes; in other cases the changes have been limited to certain parts of the labyrinth. The usual clinical symptoms of labyrinthine involvement were wanting in our case, a point to which I beg to be allowed to return later on.

It is apparent that infection, once in the labyrinth, extends along pre-formed channels; these are the passage for the VIIIth nerve and the aqueducts. Hinsberg (loc. cit.) found 108 cases where the interior of the skull was affected secondarily to labyrinth suppuration; the extension could be determined definitely in 43, namely: 25 along the internal auditory canal, 1 along this canal and the aqueducts, 8 by the aqueduct of the vestibule, 1 by the aqueduct of the cochlea, and 8 by perforations of the vertical canal. In regard to the last form of extension, our specimen shows the facility by which a suppurating osteomyelitis can invade a semicircular canal, and we are inclined to question whether the perforation of the canals quoted above was always the result of an action from within.

Extension along the auditory canal produces a rapidly fatal meningitis. The internal auditory meatus was unaffected in our case. Extension along the aqueduct of the

vestibule has been observed to form an empyema of the saccus endolymphaticus where the process may, for a time, remain localized. Jansen believes that the possibility of a cure by operation of such a condition is not out of question. In our specimen the chief focus in the bone was at about the termination of the aqueduct. The aqueduct, as has been stated, could not be identified.

All of these processes have this in common, that they attack the structures on the posterior surface of the petrous bone, causing a diffuse or circumscribed meningitis, or a cerebellar abscess.

A suppurating process in the posterior cranial fossa usually extends down the canal, producing typical symptoms of spinal meningitis, as has been pointed out by Oppenheim and others.

To recur to the clinical course of our case, the chills and high fever occurring irregularly after the first operation were traced to the pelvic condition of the patient as they were unlike the symptoms of otitic pyæmia. The fact that at the first operation there was nothing found, is a coincidence which has been noted before, and should be regarded with great distrust; the symptoms, however, did not continue with the exception of the otorrhœa. The onset of meningitis was evinced by the severe headache, pains in the back, the continuation of the high fever and ocular symptoms. The second operation also failed to reveal the nature of the disease; there was no fistulous tract to guide us, at least none was found. A symptom referable to involvement of the cord low down was the excruciating pain on movement of the bowels. Before the onset of the severe symptoms, our patient complained of the marked deafness of the affected ear. If the labyrinth was involved in this case, this was the first and only symptom. Generally, involvement of the labyrinth is characterized by a series of well defined symptoms, as vertigo, nystagmus, deafness, vomiting, and headache. The first three are referable to functional interference of the organs contained in the labyrinth. In localized disease of the semicircular canals, the hearing may not be much affected. The difficulty of determining diminution in hear-

ing in some of these cases is apparent. Vertigo, according to Hinsberg, has not been noted in certain cases of internal-ear suppuration, though it is the most constant symptom.

A final word as to treatment. Suppurations along the internal auditory meatus are, of course, not accessible. But this case and several others show that there is an area situated somewhat more externally, which may be a pyogenic centre, and which we ought to endeavor to eradicate. The symptoms in these cases are often of a slow enough course, at least for a certain time, to warn us and give us time to act. As fistulæ from the internal antral or tympanic walls have been known to lead to this area, we should follow Jansen's suggestion to search most diligently for fistulæ in these situations, or to remove the upper and posterior border of the petrous bone. If definite signs of a labyrinthine involvement and symptoms of beginning meningitis are present, after exclusion of the more usual forms of extension, we should not hesitate to invade the labyrinth.

## CONTRIBUTION ON OTOGENOUS DISEASE OF THE BRAIN, MENINGES, AND SINUSES.<sup>1</sup>

BY DR. WITTE AND DR. STURM, ROSTOCK.

Translated and Abridged by Dr. EDWIN M. COX, New York.

### IV. (*Continuation*).

#### **33. Sinusphlebitis from acute mastoiditis. Operation. Recovery.**

Richard K., æt. five, sought medical treatment October 18, 1900, on account of an exanthem of undetermined character. Pain in the left ear developed October 24th, and three days later discharge occurred spontaneously. On November 1st he was sent to the ear clinic because there was tenderness in the mastoid region.

The condition on admission was as follows: pulse rapid and regular; left drum membrane reddened, swollen, and perforated behind the umbo. Through this perforation, pus flowed freely, and the whole mastoid was tender on pressure. Temperature, 37.5° C. in the evening.

The perforation was enlarged and next day the discharge was considerable. Pulse 120 to 130; appetite poor.

*Nov. 3d.*—Suppuration undiminished. Evening temperature somewhat higher.

*Nov. 4th.*—Morning temperature 40.1° C.; aural condition unchanged; patient lies apathetically in bed, and answers questions slowly. Eyes and lungs normal. No swelling in the neck, and no apparent involvement of the cervical veins. The mastoid was opened the same evening.

*Operation.*—Granulations filled the mastoid cells and had already broken through the corticalis, and there was some pus in

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<sup>1</sup> From the Ear and Throat Clinic of Rostock University.

the antrum. The dura showed a few patches of purulent deposit and some granulation tissue upon its surface, but it pulsated. The sinus felt soft, but was not compressible, and where it was opened, it disclosed a grayish-red, soft, but not purulent thrombus. When this was cleared away, free bleeding occurred, and a considerable clot came from the direction of the torcular. The wound was tamponed and treated in the usual way.

Recovery was continuous, and on January 5th the retro-auricular wound was closed, and there was very little pus in the ear. Later, the ear became entirely clean and the patient was discharged cured.

**34. Sinusphlebitis and pyæmia. Operation. Death from meningitis and metastases in the lungs. Autopsy.**

M. P., æt. twelve, admitted to the clinic December 13, 1900. Nine months previously he had developed suppuration in the left ear, but this had not caused any inconvenience. Three weeks before admission, headache developed, followed by chills and vomiting, but he had no medical attendance for eight days. His condition became worse and he was consequently brought to the hospital where his condition was as follows: pale, tongue swollen and coated, head stiff and inclined to the left, retro-maxillary fossa infiltrated, left auditory canal full of granulations, and the cutaneous veins dilated. The respiration was abdominal and superficial, 48 to the minute, but no physical signs of pneumonia. Pulse 138, temp. 39.9°. Sensorium and eyes were normal.

*Operation*, Dec. 14th.—Auditory meatus first cleared of many freely bleeding granulations. Free incision in mastoid region showed loose periosteum and many bleeding orifices in the bone of the mastoid. When this was chiselled open there was a profuse flow of pus and blood, which was found to come from the sinus sigmoideus, in which there were also dark thrombus-masses. The latter were scraped away, and the sinus was packed. In the mastoid there was a granulation-lined cavity which communicated with the mastoid antrum. This was also scraped out. The patient was in bad condition and did not improve in spite of active treatment. He became unconscious on the second day and died on the third.

*Autopsy* showed pia mater of the convexity translucent and free from œdema, as was also the case with most of the pia of the base. The pia on the base of the cerebellum showed marked

purulent infiltration. Brain substance apparently normal. Over the tegmen of the mastoid antrum, the bone appeared greenish. The dura in the whole region of the operation wound was covered with foul thick pus. The antero-external wall of the sigmoid sinus was entirely destroyed, and the sinus was closed somewhat above the upper knee. The internal jugular vein was filled by a thrombus as far as the vena anonyma, which was adherent to its walls, and most of the veins on that side of the neck were filled with firm clot. Heart normal. Lungs contained numerous hemorrhagic areas, in the centres of some of which gangrene had begun. Other organs showed nothing significant.

When this patient was operated upon, it was clear that his condition was very bad. The only result of the operation was that the headache ceased during the few remaining hours of life. No change was seen at any time in the optic papillæ.

**35. Perisinuous abscess in acute mastoiditis. Operation. Recovery.**

N. S., æt. eleven. Admitted August 11, 1900. Had scarlet fever two years ago, and a few weeks before admission he developed an acute purulent otitis media on the right side, accompanied by fever, pain, and purulent discharge. The boy had previously been operated upon for enlarged cervical glands.

He has extensive scars on the side of the neck and the carotid artery is very thinly covered. There is much pus in the auditory canal, but no swelling or sensitiveness in the mastoid region. The drum membrane is perforated in the antero-inferior portion; elsewhere it is bulging. Temperature  $37.3^{\circ}$  C. The bulging membrane was incised and a quantity of pus evacuated, after which the temperature remained normal until September 4th, on which date it began to go up and the mastoid developed tenderness.

*Operation*, September 6th.—Mastoid opened and antrum found full of granulation tissue. Pus was found between the bone and the sinus transversus. The bone was softened downwards for some distance in the direction of the stylo-mastoid foramen, but while this was being scraped away there were no contractions of the facial muscles.

When the patient recovered, however, he had facial paralysis. The wound healed by granulation and the patient gained in weight. No microscopic evidences of tuberculosis.



During the operation palpation did not disclose any abnormality in the jugular vein, and puncture was not indicated. The extension of the bone involvement in the direction of the stylo-mastoid foramen was unusual.

**36. Extradural abscess in the posterior fossa after mastoiditis from measles. Operation. Recovery.**

D. S., June, 1900, eight days after beginning of measles, had suppuration in left ear.

*July 30th.*—Left auditory canal full of pus, mastoid swollen and tender, some swelling of soft parts below mastoid.

*Operation, July 31st.*—Pus under considerable tension was evacuated from the mastoid. Corticalis thin, removed with forceps; sinus pushed forward and covered with granulations, as was the case with the neighboring dura. The antrum was opened and cleared of some thick pus. Dura pulsated everywhere. Patient made a complete recovery in six weeks.

**37. Extradural abscess in posterior fossa after mastoiditis from scarlet fever. Operation. Recovery.**

V. V., æt. forty-five, came to the clinic August 8, 1900.

He had scarlet fever twelve weeks before this, and suppuration began in his left ear nine weeks ago. Eight days ago a swelling appeared behind his left ear. At present he is in good general condition; the left auditory canal is partially filled with pus, and on its posterior wall there is a circumscribed swelling. The whole mastoid region is swollen, but does not fluctuate.

*Operation, August 9th.*—As soon as the interior of the mastoid was reached, pus flowed freely from a large cavity lined with discolored granulations. The dura of the cerebellum and the sinus sigmoideus lay exposed in the cavity. The subsequent course of this case was normal and the patient was discharged healed October 3, 1900.

**38. Purulent leptomeningitis after chronic mastoiditis. Death. Autopsy.**

Child, æt. seven, brought to clinic September 9, 1900. Five years previously the child had had diphtheria followed by suppuration in left ear, but only recently has suffered from headaches and pain in the left side of the head. The ear was full of foul pus, and the drum membrane showed a large perforation into which

granulations from the tympanum were pushing. Rough bone could be felt in the tympanum. The mastoid is not tender. Eyes normal, no nystagmus.

*Operation, October 20th.*—Periosteum over mastoid adherent and bone very hard. Cells in mastoid large and full of foul pus and granulations. The wound was enlarged and the apparently healthy sinus exposed. Antrum cleaned out. Incus and malleus still in place, the former much eroded.

Next day temperature  $39^{\circ}$  C.

*Oct. 26th.*—Much purulent discharge.

*Oct. 27th.*—Fundus oculi normal. Vomited during night.

*Nov. 2d.*—Temperature tends to range higher. Pulse 120. Discharge better in appearance. Severe frontal headache. Examination under anæsthesia showed no change in lateral sinus, and only normal granulations upon the dura. The dura on the inner side of sinus hyperæmic but smooth. No fistula on the inner wall of antrum or tympanum. Veins in the right fundus oculi appear somewhat distended.

*Nov. 4th.*—Restlessness, headache, no appetite.

*Nov. 6th.*—Very restless, vomits. Pulse somewhat irregular. No patellar reflex.

*Nov. 8th.*—Examination of the centrifugalized cerebrospinal fluid from a lumbar puncture showed no pus cells, no bacteria; no growth on agar.

*Nov. 10th.*—Died comatose.

*Autopsy.*—At the bottom of the funnel-shaped wound two canals were found, one leading into the antrum and tympanum, and the other backwards to the saccus endolymphaticus. The blood vessels of the posterior fossa moderately distended and in the fossa a quantity of turbid serous fluid. Clot in the left sinus transversus. When the dura was stripped from the left petrous portion an oval opening was found in the posterior aspect of this bone as well as in the tegmen antri, and the dura at these points was covered with granulations and some pus. Nothing noteworthy on the inner surface of the dura. The pia of the base, including the medulla and pons and the extremities of the temporo-sphenoidal lobes, as far as the fossa of Sylvius was infiltrated, and covered with pus to the depth of several millimeters. The pia is translucent, and not œdematous. On the convexity the convolutions were found markedly flattened. The pia was congested and the vessels full of blood. In front on the left side

there was some purulent infiltration. Both lateral ventricles distended especially on the left. They and the III ventricle contained yellowish turbid serum with a few flakes of pus. A small hemorrhage in the floor of the IV ventricle was also found. Pus in cochlea but the semicircular canals are free.

It is evident that the headache for which relief was sought was caused by meningitis, and for some time was the only symptom of that disease. The fact that no micro-organisms were found in the cerebro-spinal fluid did not rule out meningitis. The channel by which the infection reached the meningitis cannot be definitely stated, perhaps through the cochlea.

**39. A true cholesteatoma in the posterior cranial fossa, infected in consequence of middle ear suppuration. Operation. Recovery.**

This case has already been reported in this journal, volume xxvii., page 352.

**40. Perisinuous abscess after acute mastoiditis. Optic neuritis, increasing after operation and most marked on the side opposite the disease.**

F. R., æt thirteen and one-half, was brought to the clinic by his physician, Feb. 10th, 1901. About three weeks previously pain in both ears had begun without known cause. The pain on the right side persisted, but there was no suppuration. A week before admission there was swelling behind the right ear, and a few days after this there was unilateral headache, and some vomiting.

On admission, the sensorium is unaffected, the patient moves forward with some difficulty, and there is swelling and tenderness in and just below the mastoid region. The right drum membrane is injected, and somewhat bulging posteriorly. Whispers audible at  $2\frac{1}{2}$  meters. Pulse 112, temp.  $38.9^{\circ}$  C. No nystagmus. Puncture of drum membrane brought only a drop of blood.

*Operation* on mastoid Feb. 11th.—When the corticalis was cut away, pus flowed, and when the abscess was emptied, pulsating tissue was seen at the bottom of the opening. The lateral sinus and the dura in the neighborhood lay exposed at the bottom of the wound. The sinus was soft and easily compressible. The antrum was opened and its swollen mucous membrane exposed.

Next day, patient in good condition. Margins of optic papillæ somewhat obscured, especially on the nasal side. No œdema.

*Feb. 12th.*—Some headache. Left optic fundus shows beginning neuritis. Right eye, fundus somewhat hyperæmic.

*Feb. 13th.*—General condition good.

*Feb. 15th.*—Left optic neuritis well marked. Marked œdema of papilla. On right side there is only hyperæmia of the disk.

*Feb. 18th.*—General condition much improved. Left eye about the same. Right almost normal.

*Feb. 27th.*—The left optic neuritis has practically disappeared.

*March 9th.*—Wound behind the ear is healed and patient is discharged.

There was inflammation around the sinus, but no thrombosis. The fact that the general condition of the patient improved steadily caused the decision not to attempt any further operative work in spite of the optic neuritis and the fever lasting several days.

**41. Extradural abscess without symptoms in a diabetic after acute meningitis. Operation. Recovery.**

H. H., æt sixty-three, came to the clinic Jan. 29th, 1901. Dec. 31st previous, without known cause, patient was suddenly attacked with pain in right ear, and in four or five days suppuration began. Jan. 14th, the drum membrane was incised and the flow of pus increased. When admitted, there was much pus in the ear, but nothing abnormal about the mastoid region. He was put upon a strict diet. Fundus oculi normal.

*Feb. 4th.*—Pain in and around the ear. Undiminished flow of pus.

*Operation, Feb. 5th.*—Mastoid dense and hard. Antrum full of pus and granulations. Tegmen antri absent, so that dura lay bare. Between dura and bone a collection of about one dram of pus was found. Patient improved rapidly and went away in good condition, March 3d.

The only influence upon the amount of sugar in the urine which the operation appeared to have, was to cause a temporary diminution. The patient lost some weight, but felt better in general.

**42. Extradural abscess in the posterior cranial fossa, with destruction of the sigmoid sinus from mastoiditis occurring in the course of typhoid fever.**

Q. H., æt. nineteen. Typhoid fever, severe in type, began Sept. 4th, 1900, and during a relapse he began to have pain and deafness in the left ear. Suppuration soon ensued. At present his general condition is bad. Sensorium unaffected. Evening temperature,  $38^{\circ}$  C. Much thick pus in the left ear, and drum not completely visible. The superior wall of canal is bulging. The entire mastoid area is infiltrated and tender. Whisper audible at 30 cm on the left. Fundus oculi normal.

*Operation, Jan. 13th.*—Abscess, containing about one dram of pus, was found around the lateral sinus. This cavity was cleared out, and at one point the granulations were found to have destroyed the wall of the sinus, partly filling that vessel. The bleeding was free for a time, but was controlled by packing. The antrum contained no pus.

*Jan. 20th.*—First complete dressing of wound. Cerebellum pulsating, condition good.

*Jan. 25th.*—General condition good; wound closing rapidly.

*Feb. 16th.*—Wound closed.

*Feb. 24th.*—Discharged well. Hearing on both sides practically normal.

**43. Embolic pneumonia after operative injury of the mastoid emissary vein. Recovery.**

M. G., æt. twenty-one. Has been slightly deaf since age of four on account of aural suppuration after measles. Right drum membrane retracted, cicatricial and adherent to the promontory. On the left, the whole drum membrane is absent. Tympanic mucous membrane appears like epidermis. Hearing much diminished. Purulent discharge from this ear, for which syringing did not prove beneficial. Operation was thought to offer some hope of benefit to hearing by stopping suppuration.

*Operation, May 1st, 1896.*—The bone of the mastoid fossa was very sclerotic. The lateral sinus was displaced anteriorly. The emissary vein entering the sinus was very large, and was torn during operation, the bleeding being controlled by packing, and the rest of the operation had to be postponed. During the next four days the temperature was normal, but then the patient developed signs of pneumonia, and went through a somewhat irregular attack, lasting fourteen days. On the twenty-third day the operation was completed according to Stacke's method. Granulations in the attic, but none in antrum. The auditory

canal was opened longitudinally posteriorly, and the wound treated by packing. In two and one half months the wound was healed, and hearing had much improved.

The rupture of the emissary vein evidently was the starting point of a thrombosis which became septic, and gave rise to an embolic pneumonia of an irregular type. The case shows that the tearing of a small vein opening into a sinus is not so harmless as might be supposed, considering the size of the vessel.



## REPORT ON THE MEETING OF THE NEW YORK OTOLOGICAL SOCIETY OF MAY 28, 1901.

By H. A. ALDERTON, M.D., SECRETARY.

President HERMAN KNAPP, M.D., in the chair.

Dr. ROBERT LEWIS, Jr., presented **a case of temporo-sphenoidal abscess.**

R. C.—was admitted to the New York Eye and Ear Infirmary on the 23d of January, 1901, and from her and her friends the following history was obtained. Since her childhood (the patient is now twenty-three years of age) she has had an almost constant purulent discharge from the left ear. Ten months ago, during the cessation of the discharge, she complained of pain in the ear. An ice-coil was applied by her physician and the pain subsided with a return of the otorrhœa. The present attack began on Sunday, January 13th, with a "cold." On January 14th, she had some earache and tinnitus, headache on the side of head affected, no dizziness, no vomiting, and the discharge stopped. Patient kept growing worse and on Thursday, January 17th, complained of chilly sensations and of pain in her back. Her medical attendant made a diagnosis of the "grippe." January 18th the patient had a severe chill, which lasted twenty minutes, her teeth chattered and she shook convulsively; temperature rose to 104° F. but was not followed by perspiration. She had violent headache on the left side, the pain extending to the neck; however, the mobility of the neck was normal. Some vomiting (not projectile). Saturday, January 19th, 1 P.M., the patient had a chill lasting eight minutes, followed by a rise of temperature and sweating, with much exhaustion. A second chill at 7 P.M. which lasted twenty minutes. January 23d, she had another severe chill lasting twenty minutes, followed by fever and sweating, muttering

delirium and a tendency to drowsiness. January 22d, a slight left facial paralysis was noticed; no chill on this day but the patient was very weak. Amnesic aphasia appeared on this day, drowsiness more marked, answered questions rationally but very slowly, no convulsions at any time, and no slowing of the pulse. She used the word "fan," indiscriminately, calling her physician Dr. "Fan," her coat "fan," etc. On January 23d, L. saw her for the first time, on her admission to the hospital. The physical examination showed mastoid to be slightly tender over the antrum, the tip, and the emissary vein; no œdema over the mastoid; a profuse and foul discharge from the auditory canal; a furuncle upon the posterior cartilaginous wall; no tenderness in the neck nor did the jugular vein seem to be thrombosed; no ocular paralysis; a slight general anæsthesia, though no difference between the two sides; knee-jerk normal; temperature  $103\frac{1}{4}^{\circ}$  F., pulse 108, respiration 24. **Diagnosis:** *Mastoiditis, Cerebral Abscess.* She was prepared for operation. **Operation:** The usual curvilinear incision was carried forward so as to expose the entire squamous plate of the temporal bone, a third incision was carried from the curvilinear incision at the top of its curve, upwards and backwards. The mastoid cortex was normal in appearance and of an ivory-like hardness; on opening the antrum a very foul smelling discharge appeared. The antrum was very large and filled with cholesteatomatous material. Bone necrosis extended downwards to the tip, backwards so as to include the sinus wall; the sinus was exposed for about an inch and was covered with a foul-smelling pus and with granulations. The pus kept oozing out of the vicinity of the antrum and on exploring with a probe it passed through the tegmen tympani and entered the cranial cavity some distance. On its removal a tablespoonful of thin foul-smelling pus flowed out. The posterior and upper canal-wall was removed and the tympanic cavity was cleaned out. Then the whole of the squamous portion of the temporal bone and some of the anterior inferior angle of the parietal bone was removed. The exposed dura was blackish in spots and everywhere covered with lymph and bathed in pus. This extradural abscess was situated fairly far forward and covered over the temporo-sphenoidal lobe. The brain pressure was plus over the temporo-sphenoidal lobe. The scalpel was passed directly into the brain at this point and the incision carried upward and forward about three-quarters of an inch. Some disintegrated brain material and pus escaped. The

size of the cavity was about that of a walnut and was lined with a membrane. The cavity was not irrigated but cleansed with pledgets of gauze. An annoying hemorrhage occurred from one of the meningeal vessels. Sterile gauze packing used. The posterior incision as well as the third incision was closed with sutures. Firm pressure by means of the dressings and bandages was applied. The extradural abscess was walled off by adhesive inflammation from the healthy dura. The operation lasted one hour and fifteen minutes, and was followed by little or no shock to the patient. The temperature following the operation was  $98\frac{4}{10}^{\circ}$  F., pulse 100, good and strong. During convalescence the temperature never went above  $100^{\circ}$  F. and never below  $98^{\circ}$  F. During the week following, the patient was restless, at times noisy, and had retention of urine. January 26th, facial paralysis hardly discernible. The aphasia somewhat better; complained of much headache; when the wound was dressed no irrigation was used but the cavity wiped out with cotton pledgets soaked in weak bichloride solutions, and the wound packed with sterile gauze. The wound was dressed every other day. On February 20th the aphasia had entirely disappeared. On March 7th a small abscess developed in the anterior extremity of the wound. Patient was etherized and incision made over the point of fluctuation and a discharge of pus followed, and, on probing, a small point of necrosed bone was found. This was removed with the rongeur and curette. Patient was discharged from the hospital on March 21st. By the middle of April, epidermization of the tympanic cavity had taken place; the external wound had healed some time previously. A little discharge still persists, coming from a small granulation in the vicinity of the Eustachian tube. The patient's physical condition was never better.

*Discussion.*—Dr. TOEPLITZ questioned as to the advisability of doing a radical operation at the time of operating for the abscess; right from the start. Dr. WHITING asked if the incision into the brain penetrated deeply into the cortex? Dr. LEWIS: Only very superficially, under the dura. Dr. WHITING thought it might have been an abscess caused by erosion of the superficies of the cortex. Dr. KIPP asked whether the abscess was in the temporo-sphenoidal lobe? Dr. LEWIS: Yes, in the brain tissue. Dr. GRUENING: Amnesic aphasia does not always mean that we have to do with an abscess of the brain. Mentioned a case in confirmation. Dr. KNAPP: There may be aphasia without any abscess of the

temporal lobe; without any purulent process. Embolism may produce such a condition. Dr. MCKERNON asked as to the color of the dura in Dr. Lewis' case? Dr. LEWIS: Dark reddish. Dr. MCKERNON: Did this discoloration extend very far? Dr. LEWIS: Quite far. Dr. MCKERNON spoke of a case illustrating dark discoloration of the dura.

Dr. ALDERTON presented **an improved canula for washing out the mastoid antrum.**

*Discussion.*—Dr. GRUENING spoke of a case of O. M. P. C., following scarlet fever in childhood, on which a radical operation was done. The ossicles were found to be healthy, the suppuration being only in the antrum of the mastoid. Dr. KIPP had a case of attic disease under observation for twenty (20) years, following scarlet fever. There was a perforation through Schrapnell's membrane. At numerous times there had been symptoms of retention, but the patient recovered without operation. Finally, the perforation enlarged, and the neck of the hammer was exposed, showing superficial caries. Cure followed. Dr. ALDERTON: The canula is only designed to be used after ossiculectomy.

Dr. J. L. ADAMS reported **a case of abscess of the temporo-sphenoidal lobe.**

*Discussion.*—Dr. WHITING: I saw the case reported by Dr. Adams. The nurse said the patient had a staggering gait. The patient had trismus, pronounced yawning, double neuro-retinitis. He believed it to be a case of abscess of the cerebellum, but recommended exposure of the temporo-sphenoidal lobe, as pressure from an abscess in this region might have induced all the symptoms complained of. Dr. KIPP asked whether there was neuritis or neuro-retinitis? Dr. WHITING: Patient had neuro-retinitis with numerous hemorrhages and patches of exudation, and had also paralysis of sixth nerve of left eye. Dr. KIPP: In cases of choked disc, the retina is not usually involved, and the sight is usually recovered.

Dr. MARPLE reported **a case of mastoiditis, in a child, with excessive œdema of the eye-lids.** Boy, age nine years, with left acute otitis media purulenta following scarlet fever. *Mt* had been incised freely twice. Subsequently mastoid œdema and redness with marked tenderness on pressure, appeared. A mastoid operation was done. A very deep-lying antrum was opened, containing no pus, and hardly any granulation tissue.

Next day, some trifling œdema of eye-lids, which increased the following day. There was apparent fluctuation in front of the auricle, and a counter-opening was made here, but no pus was found. Drainage. The following day, 3rd day after operation, the patient was seen in consultation by Dr. Whiting. There was swelling of the tissues over the temple, and the swelling of the eye-lids was so great that it was almost impossible to press the lids far enough open to get a view of the fundus. Dr. Whiting found a spot of osteomyelitis a little in front of and above the auricle in the squama. This spot was cleaned out with curette and rongeur. The œdema rapidly disappeared, and the patient made an uninterrupted recovery.

*Discussion.*—Dr. GRUENING asked what the condition of the ear was? Dr. MARPLE: O. M. P. following scarlet fever. Dr. GRUENING: Œdema of the eye is very common, in children, with mastoid disease. It sometimes occurs when sutures are used in the upper angle of the operative wound. Thinks that we should not use sutures in infective mastoiditis. Dr. H. KNAPP: Was there exophthalmos? Dr. MARPLE: No. Dr. KIPP stated that in Zaufal's clinic they were in the habit of suturing the operative wound completely. Dr. GRUENING: But his assistants state that they are frequently compelled to re-open.

Dr. QUINLAN reported **case of mastoiditis, with intracranial complications**, sinus accidentally opened.

*Discussion.*—Dr. BACON asked whether there was any pain on pressure over mastoid. Dr. QUINLAN: Not until œdema developed, then over the emissary vein and tip. Dr. BACON: That point of absence of pain in sclerosed conditions should be emphasized. He has operated on such cases, the only indication being the presence of profuse discharge.

Dr. GRUENING reported **a case of mastoiditis complicated by erysipelas**. Has operated thirty-two times in the Mt. Sinai Hospital, and had erysipelas develop four times. Asked whether such frequency is noted in special hospitals. All the cases recovered. The first case was a private one, not in touch with the other patients; a little child. It first affected ear and face without touching the scalp. Last case, also private, remained in isolating house four weeks. Temperature varied between sub-normal and 106° F., a difference of 9° in twenty-four hours. The patient felt well all the time.

*Discussion.*—Dr. KIPP had operated in one case of mastoiditis.



while erysipelas was also present, and the case did well. Dr. GRUENING: That was the case with one of my patients. Dr. EMERSON: Some years ago the Manhattan Eye and Ear Hospital had an epidemic of erysipelas. On investigation as to the possible cause, it was found that there were a number of ventilators filled with dust. These ventilators were cleaned out and the epidemic disappeared. Drs. J. L. ADAMS and MC KERNON spoke of the occurrence of erysipelas at the New York Eye and Ear Infirmary. Dr. GRUENING thought that the larger operative field at present might have something to do with the greater frequency of erysipelas. Dr. DUANE stated that the New York Hospital had had an epidemic of erysipelas, and they had finally traced it to the ventilators. Dr. BACON stated that at the N. Y. Infirmary the peculiarity was that the cases broke out in one corner of the ward. Dr. H. KNAPP in his last thirty-two cases of mastoid operation had no erysipelas. A few in former years.

Dr. C. J. KIPP reported a case of **acute otitis media, with thrombosis of the lateral sinus. Recovery after removal of thrombus, without ligation of internal jugular vein.** A woman, about forty-five years of age, had an otitis of about five weeks' duration with profuse discharge and great pain in mastoid region. Posterior superior wall of canal red and much swollen. The antrum was found filled with pus and granulations. A fistula extended towards the lateral sinus, the bony covering of which was discolored. On removal of this, the lower part of the sigmoid sinus was found to be of a yellowish color, not unlike wet leather, while near the knee it was nearly normal in appearance. Incision of the sinus caused escape of a considerable quantity of purulent fluid; near the knee a disintegrated thrombus filled the sinus. After the removal of the thrombus, with a sharp spoon, there was free bleeding, which was stopped by pressure. From the lower end of the sinus a good deal of purulent matter was removed, with spoon, but all efforts to establish communication with the bulb were futile. Careful palpation of region of internal jugular vein showed this to be normal. The discolored outer wall of the sinus was not cut away, but the sinus tamponed with iodoform gauze. The internal jugular was *not* ligated as the patient showed signs of faintness. For a week after the operation the temperature ranged between  $99^{\circ}$  and  $100^{\circ}$ . After that it gradually rose to  $103^{\circ}$  in the evenings. At same time the patient complained of pain in right gluteal region and on examination a large abscess was found

here. After opening of abscess, the temperature fell to normal and remained so. Since then the patient has had no further trouble. The wound closed entirely in about two months and the patient is now in perfect health. The case is thought worth reporting, as it shows that recovery can take place without ligation of internal jugular vein in a case in which the sinus contained fluid pus and a thrombus, presumably infected by contact with the purulent fluid, occluded the sinus near the bulb. It also shows that resection of the disintegrated walls of the sinus is not always essential to speedy recovery. That the development of the gluteal abscess would have been prevented by the ligation of the jugular or the excision of the diseased wall of the sinus is not probable.

Dr. GORHAM BACON reported a case of **epileptiform attacks with O.M.P.C.** W. C. M., thirty-five years old, married. Seen April 22, 1901. Has been on stage fifteen years. Had scarlet fever eight or ten years ago. Deaf in right ear. Patient is strong and robust in health. First had an attack with loss of consciousness thirteen years ago, repeated regularly every thirty days afterwards. These attacks have been fairly constant ever since. The longest interval has been six weeks. On one occasion had three in one day, one right after the other. Usually nocturnal. No cry, had bitten tongue. Is first blue, then pale; rigid, then limp. Afterwards sleepy, nauseated and without appetite. No headache. Slight twitching of the right eyelid. Hearing: Watch, R. ear one-half inch, L. ear one inch. Bone-conduction increased on right side. Galton whistle: highest notes not heard at all, other notes close to ear, with right ear; highest notes not heard at all with left ear, others heard fairly well. Raised voice heard fifteen feet by left ear. Discharge from right ear, thick and offensive, the same in character for some years. Right canal somewhat contracted. No landmarks can be made out. Evidently a perforation in Schrapnell's membrane, as probe passes into attic and touches carious bone. Left *Mt* dull and retracted. A year ago the patient had the ossicles removed. Discharge was less for a short time but soon reappeared. May 1st, Schwartz—Stacke operation performed. May 23d, wound closed behind auricle; very little discharge from middle ear. He had a slight attack on the 19th; the interval being six weeks this time instead of thirty days and the attack being less severe.

*Discussion.*—Dr. MCKERNON spoke of a similar case,—one of

O.M.P.C. An ossiculectomy was done. No epileptiform attack since. Dr. KNAPP: How long since last attack? Dr. MCKERNON: None since March, 1900.

Dr. WHITING spoke of **a new method of dressing mastoid wounds.**—Has been impressed by the great pain experienced by patients at the first dressing. He has completely solved the problem of rendering it painless. He takes, after the completion of the bone operation, a piece of rubber tissue, six inches square, perforated with numerous holes. This is applied to the wound, packed full of gauze, and the other dressings placed as usual. There is no adhesion at the first dressing and no pain. No unfavorable complication has developed so far. The relief is extremely gratifying. The rubber tissue is kept in a solution of bichloride.

*Discussion.*—Dr. GRUENING: This pain is certainly present with the dry dressing but is not present with the moist, covered with rubber tissue externally. The moist dressings also drain better, but it is necessary to change them every day,—yet mastoid wounds should be dressed every day. We should not leave the pus in contact with the wound so long as two or more days. Thinks Dr. Whiting's method is a great improvement. Dr. J. L. ADAMS asked how the poulticing effect from the rubber tissue was avoided. Dr. GRUENING: It is a poultice, but acts very favorably and the skin is not affected. Dr. ADAMS: How long is it before the first dressing, and how do the granulations look? Dr. WHITING: The first dressing is made from the second to the sixth day. Not very much granulation tissue shows at the first dressing. The tissue looks a little blanched. Dr. J. L. ADAMS asked whether there was any fluid between the rubber tissue and the wound surface. Dr. WHITING: No, the fluid escapes through the fenestrations. Dr. E. B. DENCH: Dr. Halstead had used this method in all bone cavities, from operation, for many years. Dr. WHITING said that he did not claim originality. Dr. H. KNAPP: Don't we remove our dressings too soon? Macewen sometimes leaves the first dressing eleven days and then its removal is not painful. To do it on the second day is very painful. Dr. WHITING asked whether Dr. Gruening had used silkworm-gut as suture material. He had used it without the development of stitch abscesses. Dr. KIPP had the same result. Dr. GRUENING prefers silver sutures, but has given up all suturing. Dr. DENCH spoke in favor of perfectly sterile catgut, which acts

beautifully. Dr. GRUENING thought it must be very difficult to sterilize catgut. Dr. DENCH said he used the dry method.

Present :—Drs. Hepburn, H. Knapp, McKernon, Whiting, Duane, Gruening, Kipp, Toeplitz, Emerson, Lewis, Quinlan, Marple, J. L. Adams, Bacon, Dench, and Alderton.

## REPORT OF THE SECTION ON OTOTOLOGY, OF THE NEW YORK ACADEMY OF MEDICINE.

By Dr. ROBERT C. MYLES, Secretary.

President, JAMES F. MCKERNON, M.D., in the Chair.

STATED MEETING HELD OCTOBER 9, 1901.

**A new Eustachian catheter curve.** Dr. GEORGE B. McAULIFFE presented this instrument and demonstrated its use upon a patient. He had been experimenting with it during the past six months and he was satisfied that it fulfilled a want in certain cases. Instead of the angle being in the end of the curve, it was distributed along the curve of the instrument. It was specially suitable in those patients who had wide nares. The instrument is passed directly into the tube after traversing the outer part of the floor. As it passes along the outer portion of the floor the septum shoves the catheter right into the Eustachian tube, in the last movement of catheterization.

**Presentation of a patient showing extensive thrombosis of the lateral sinus, with reinfection following a chronic suppurative otitis; ligation of the internal jugular vein.** Dr. M. D. LEDERMAN presented this patient.

F. R., seventeen years of age, was admitted August 9, 1901, to the Manhattan Eye and Ear Hospital, with symptoms of a septic nature. He gave a history of having had a running ear for ten years, which later improved. A week ago he was struck a blow over the right ear, which caused a blood discharge for two days. There was tenderness over the mastoid, with a temperature of 100.8° F.; pulse 84.

Examination revealed an old suppurative otitis, with the membrane almost entirely absorbed, and some odoriferous pus in the middle ear. Antiseptic douching every three hours with



the Leiter's coil was the treatment carried out for twenty-four hours.

The next day the patient complained of some pain over the side of the head. The ice coil was discontinued so as not to mask symptoms, as there was a previous history of irregular suppuration.

A distinct chill of severe character attacked the young man with the usual symptoms of a septic involvement of the sinus. The skin was quite moist, of a peculiar sallow appearance, and tongue heavily furred.

The first operation was performed August 12th. On opening the mastoid, not much pus was found in the antrum, but considerable granulation tissue was removed. Diseased bone was curetted from around the sinus, and the vessel was incised from the knee to the jugular bulb. A septic thrombus was found, and the lumen of the sinus was cleansed until a free bleeding showed that the posterior opening was patent. No return flow followed the use of the curette through the lower end of the sinus (the jugular bulb), so the jugular was tied about two inches from the clavicle. No disease of the vein in this region could be detected, so no attempt at its resection was made. As soon as the ligature was applied it immediately filled with blood, permitting the belief that a free circulation was being carried out through the tributaries.

The patient did well for two days, with a slight rise of temperature, and the first dressing was made August 14th. The neck wound was found clean, but the antrum opening showed some pus; the sinus seemed to be doing nicely. Thought advisable to cleanse the antrum site, and so employed the curette until a clean return of fluid through the external canal after syringing revealed that the drainage was good. The temperature remained around 99° F. for five days, then suddenly arose to 105° F.

On August 17th we found some pus in the region of the jugular bulb, and I removed the bone surrounding this area, but found nothing but a little pus, which did not lead to any pocket. The wound was then dressed daily, and it was noticed that the temperature fluctuated, with an occasional chill, indicating sepsis in a severe form. On August 27th a purulent discharge was observed coming from the posterior opening of the sinus. The patient was again narcotized for the third time, and the external bony wall of

the sinus was removed to near the torcular. An incision was made to the end of the bone wound, through the sinus, and the infected thrombus was curetted away. The wound was then douched with bichloride and the entire wound dressed. The antrum wound was packed separately.

From this treatment the temperature gradually decreased to 99° F., and the patient rapidly improved.

The infection evidently occurred from the antrum, as this portion of the sinus had been thoroughly cleansed at the first operation.

*Discussion.*—Dr. EDWARD B. DENCH thought that the cardinal point which should always be followed, no matter whether the vein fills up or not, should be to ligate the tributary branches in these cases and then to resect the vein from a point in the neck as low down as possible to a point as high up as possible. He thought that the constitutional effects might possibly have been avoided if complete resection of the vein, with ligation of the tributary branches, had been done. A pet point with him was the thorough packing of the sinus wound from the antrum so as to prevent infection from the original site. Dr. LEDERMAN answered that it was packed off. Dr. DENCH did not believe that such a condition of affairs could ever occur if both the antrum and sinus were packed off and a firm gauze packing inserted between so as to isolate the two fields. The outcome of the case presented, he thought to be very satisfactory and there would be but little scarring left in the neck. Aside from the advice as to complete resection of the vein, he had nothing to add.

Dr. MCAULIFFE asked if the condition was due to traumatism, or was it a sequel of an ordinary catarrh? This same case had been under his and Dr. Whiting's observation during a period of four or five months, and then the symptoms were those of an ordinary otitis media, without any mastoid development. He thought that after he had passed into Dr. Lederman's hand traumatism had become a causal factor.

Dr. WENDELL C. PHILLIPS said that, in this connection, he was reminded of a recent experience of his own occurring in a case that manifested one of the symptoms implied in this case, *i. e.*, from traumatism, which case he would report at a later meeting. In this case there was no sinus involvement, but he came to the hospital some time during the following spring with all the

signs of cerebral involvement and, at the same time, with a chronic suppuration of the middle ear; so it was natural to presume that the cerebral involvement was due to the middle-ear trouble. He was operated upon and the mastoid bone was found to be extensively involved, as also was the petrous portion of the temporal bone. Later this patient died of a pachymeningitis. No place was found where infection could travel from the mastoid into the brain. After a few days it was learned that the child had received a severe blow upon the head. He was still at a loss to know what was exactly the real cause of the pachymeningitis.

Dr. THOMAS J. HARRIS was present at the performance of the first operation upon this man. He was particularly interested in what had been reported as re-infection, and he was not perfectly clear in his own mind as to the cause of it. He believed there had been complete establishment of the flow from the torcular, and he had urged the operator to still farther introduce the curette to get a more perfect flow, until there was really a torrent of blood flowing from the field. The antrum was packed off from the lateral sinus and, in spite of all this, re-infection presented itself in some—to him—unaccountable way.

Dr. DENCH said that it seemed to him that the re-infection probably occurred from the same side because the tributary branches had not been tied off.

Dr. LEDERMAN felt certain that re-infection did not come from omitting to tie off the tributary branches, but came directly from the antrum, as pus was noticed in the antrum at the first dressing. The antrum was thoroughly curetted again, and packed separately. The jugular vein immediately filled when the ligature was tied, which showed that free circulation was present. Furthermore, after the removal of the septic clot from the posterior wound of the sinus, near the torcular, the septic temperature disappeared, proving conclusively that this site was causing the trouble, and not the tributary circulation, as the neck and bulb wounds were clean and healing rapidly.

He has had a little experience with these cases, five in number, three of which recovered. In these three he did not attempt to tie off the communicating tributary branches, but in the other two he did.

In manipulating the probe and curette we were likely to spread infection, unless gentleness and caution were practised. He

remembered one case in which he had syringed out the lower end of the jugular through the neck wound, removing a long clot in this manner, after failure to dislodge same by syringing from the bulb downward. Twelve days after, there appeared a large swelling in the neck, which was thought to be the result of an infection, but was found to be a periphlebitis. After tying off four or five tributaries the size of the thumb, the patient made a good recovery. In the case just presented, the infection came from the antrum and not from the collateral veins. This case shows how quickly the wounds heal at times, and furthermore emphasizes the importance of removing all diseased tissue.

It is not possible to determine microscopically the extent of the infectious process.

Dr. EDWARD B. DENCH thought the discussion of the subject was too important to be discontinued. He remembered one case in which the vein was involved but could not be dissected out because the walls were very soft; in that case the vein filled perfectly after the ligature had been applied below. The tributaries were tied off and the infected vein left in situ and the patient made a smooth recovery. The mere fact of the vein filling after the ligature had been applied, did not, in his opinion, mean that there might not be still danger from infection. He insisted upon the necessity of tying off the tributaries, for infection may extend from the antrum into the sinus and through the tributaries into the general systemic circulation.

Dr. LEDERMAN did not mean that re-infection took place from the other side of the torcular as suggested by Dr. Dench; it occurred from the same side from continuity of tissue, as the gauze was soiled from the antrum packing. The subsequent history of the case proved conclusively that the septic temperature and symptoms arose from the re-infection of the posterior sinus wound, and not from any sepsis in the tributary circulations. Immediately after the third operation (*i. e.*, the removal of the external bony wall of the sinus to near the torcular, and an incision through the vessel itself, with a thorough curetting of the diseased contents, until a free bleeding showed that the channel was clear), the temperature returned to the normal limit, and so remained.

Dr. JAS. F. MCKERNON remembered the case referred to by Dr. Dench and also two other cases in which the vein collapsed and later filled up completely; when the facial and maxillary

veins were removed they were found to contain thrombi at least one and a half inches in length. He thought that it would be better to dissect out the internal jugular after ligation and remove its tributaries, first ligating them, and look for diseased glands in the vicinity, rather than to ligate that vessel and allow it to remain as a possible source of future infection.

Dr. FREDERICK WHITING said he would like to supplement the remarks of the preceding gentlemen. He believed that the only safe course was to tie off the branches that took part in the collateral circulation, dissecting them as low down as possible. He had removed a considerable number and had defined the limits of the clot, and, after cutting off the veins far below the clot, had subjected the walls of them to a microscopical examination and had found them infiltrated with streptococci. The visible boundaries of a clot offer no assurance that infection ceases at that point.

**Symptoms pointing to the necessity for operative interference in mastoid suppurations.**

Dr. WENDELL C. PHILLIPS read this paper. In selecting the time for operative interference in mastoid complications of suppurative middle-ear disease, the judgment of the operator is often subjected to a severe test, and the object of the paper was to endeavor to outline those symptoms which may be looked upon as pointing to the necessity for operative interference. For convenience of description he divided the topic into acute and chronic mastoid suppuration.

**Acute suppurative mastoiditis.**—In all grippe cases a large amount of infectious material is present, the most characteristic of which are the streptococci, the staphylococci, and the pneumococci, in the nose and naso-pharynx. The accompanying inflammation and tumefaction of all the intranasal tissues so obstruct the nasal channels that ordinary blowing of the nose is attended with more or less danger, for some of the infection may enter the Eustachian tube and become the exciting cause of acute middle-ear suppuration, which is peculiarly violent, virulent, and rapidly destructive to all tissues with which it comes in contact. It should be the routine practice to make microscopical examinations of the pus in all acute cases of middle-ear suppuration, and if streptococci or staphylococci are present, we then know the tendency to mastoid involvement is much greater than otherwise. Where general infection is suspected, blood examination also should be made. Other things being equal, knowing the rapidity of the



destructive nature of the pus, with its tendency to migrate into tissues far beyond the confines of the middle ear, would lead us to operate early.

Probably the most marked symptom during the course of an acute suppuration of the middle ear showing involvement of the mastoid is pain, occurring some time after the excruciating pain preceding the suppuration has passed away. This pain is dull, heavy, not definitely localized but diffused over the surface of the temple. With it there is a feeling of fulness, heaviness, and pressure over the entire parietal region. The pain may or may not be constant. Another prominent symptom is tenderness upon pressure, usually marked at the tip of the mastoid, but is more significant if it is higher up over the mastoid antrum; the mastoid tip may be tender on pressure even when there is no disease present. Temperature also has been considered, but it has no very important symptom in mastoid involvement. Facial expression has been emphasized, but it rather indicates anxiety. The head usually hangs forward and leans toward the healthy side. External periostitis with or without cutaneous infiltration has also been considered as a symptom, although, as a rule, operative interference should be resorted to long before these symptoms appear. When present it is more a complication than a symptom. When the drum membrane, together with the posterior-superior portion of the wall of the canal, is found to be bulging downward and forward into the canal, a picture is given which constitutes one of the most prominent symptoms of mastoid suppuration. Prolonged tenderness upon pressure over the region of the antrum, together with the bulging described, gives sufficient reason for operative interference, especially so when the pus contains streptococci or staphylococci. Symptoms of other complications the speaker simply referred to, such as rigors, vomiting, vertigo, choked disc, aphasia, paralysis of the extremities, high temperature, facial paralysis, dulled mentality, uneven pupils, the so-called typhoid condition, etc. All of these symptoms indicate that the suppurative process has gone beyond the mastoid cells into either the lateral sinus, the dura, the cerebrum, or the cerebellum. It may be possible to have a non-suppurative involvement of the mastoid cells, a mere congestion, but such a condition is exceptional.

After briefly discussing the treatment of acute purulent otitis media, Dr. Phillips continued by saying that any prolonged attempts

at aborting mastoid involvement was to be deprecated. He emphasized the importance of placing the patient in bed and keeping him there until all symptoms had passed away. It was especially in the grippe cases that we should not delay operative interference. The method of operating should carry out this one prime factor, namely, that all diseased tissue should be removed.

**Chronic mastoid suppuration.**—Long-delayed suppuration of the middle-ear, attended with involvement of the attic and probably the antrum and mastoid cells, may lead to the necessity for external operation in order to overcome the suppurative process. This is especially true in cases of chronic otorrhœa, the discharge of which is offensive, and with the establishment of cholesteatomatous masses and carious bone. Only by an external operation, in many instances, may we hope for permanent relief. That a chronic otorrhœa is attended with more or less danger to life will not be denied, and to-day life-insurance companies absolutely refuse to accept as risks persons who suffer from a chronic discharge of the ear. An attempt should be made to cure permanently all cases of chronic otorrhœa. Local measures, removal of the necrosed ossicles, and of other known methods should be made use of before resorting to external operation.

Dr. EDWARD B. DENCH was heartily in accord with everything said by Dr. Phillips with the exception of one point, *i. e.*, that we should operate earlier in some cases. He believed that an exploratory operation was perfectly justifiable; it did not make any difference whether one did an exploratory mastoidotomy or an exploratory laparotomy so far as the risks were concerned. Dr. Phillips said that we should not operate until we made sure of the diagnosis, but he had to confess that there were many cases in which he could not make a diagnosis until he had opened up the bone.

In a certain proportion of cases, about the only symptom which would lead to proper treatment is emaciation of the patient, and the symptoms of a mild but progressive sepsis. He remembered a case in which the drainage seemed to be free, and there was a slight swelling of the deep part of the canal. At the same time the child progressively lost flesh and always had some temperature. He saw the case late one night and, taking the temperature of the child, the history, and the general appearance into consideration, insisted upon immediate operation, much to the disgust of his colleagues. He found the mastoid completely broken down. The child made a rapid recovery.

Dr. DENCH referred to another case which will be reported in detail at a later period. This patient had had certain symptoms of mastoiditis, and when he saw the case the acute symptoms had passed off. As there was no evidence of mastoid trouble present when he saw the patient he was inclined to discredit the history previously given, and he thought there must have been some mistake. He thought the patient might have had a furuncle in the canal. This patient was not under observation except at very irregular intervals. Three months later he operated and found the mastoid broken down, which showed that the mastoid operation had been indicated three months previously.

He agreed with Dr. Phillips that it was not right to subject the patient to operation simply because it did no harm. But, on the other hand he believed that, under the usual aseptic precautions, mastoid operations were devoid of danger, as much so as a simple incision through the membrana tympani. He thought it was our duty to our patients to make an exploratory incision early, which would not only clear up the diagnosis but would also hasten the recovery from the acute suppurative process. In not one instance had he ever seen hearing impaired when the mastoid operation had been performed early; this is not so when suppurative otitis media runs a long course. In cases where the operation is performed early, when there is but slight involvement, the function of hearing is restored to the normal standard and there is a shorter convalescence from the effects of the systemic infection. Therefore he was an advocate of the early operation.

Dr. M. D. LEDERMAN said that he inferred from the remarks of the last speaker and the reader of the paper that the rule should be to operate when in doubt, and he deemed that to be a good rule to follow, especially in acute cases. Following the attacks of grippe there seemed to be a distinct and definite form of infection in the majority of instances where tenderness persisted even after free drainage and cleansing; in those cases we often find the antrum a reservoir of pus and extensive destruction of bone in the mastoid. He detailed two cases in illustration.

Dr. THOMAS J. HARRIS said that Dr. Phillips's able paper seemed to have brought about a discussion of early operative interference. He wished that Dr. Dench would again speak and inform his hearers more definitely what he considered the indications for early operative interference, and when he would operate.

Dr. DENCH, in replying, said that chronic suppurations did not,

in the majority of cases, involve the mastoid. If we opened the mastoid in every case, irrespective of the symptoms, we would find healthy bone in many of these cases. Regarding the question "when to operate in cases presenting symptoms of mastoiditis," that was very difficult to answer. Dr. Woods, before the Otological Section of the American Medical Association, reported three cases in which a late mastoid operation was necessary. Where there was an affection of the mastoid cells, due to purulent infection, he believed that the disease might lie quiescent for a few days, weeks, or even years, but he did not believe that the patient could recover without operative interference.

Regarding the indications for operative interference, he considered of importance persistent local tenderness; also, slight temperature in cases of otitis with previous acute symptoms; also, slightest evidences of systemic infection; also, the presence of leucocytosis.

Dr. ROBERT C. MYLES said that one, after looking over the ancient literature on this subject, would undoubtedly believe that men had been too conservative. He thought that it was by properly defining these symptoms, and acting intelligently and promptly, that we could avert from our patients the dangers of intracranial infection. It was very interesting indeed to note that a large proportion of the cases had recovered without operative intervention. The position held by Dr. Dench, he thought, was assumed by all: the early operative course, in many cases, is partly exploratory, because we are not absolutely certain concerning the pathological condition within the cavities.

Dr. MCAULIFFE said that there was a tendency to deprecate the diagnostic point of tip tenderness. He emphasized that this became the prominent symptom when there was a more or less direct communication between antrum and tip as seen in dry anatomical specimens; that tension was relieved by the discharge penetrating into the tip, and the latter became the principal focus of inflammatory symptoms. With tip tenderness and one or two of the other symptoms present, such as persistent discharge, etc., we will always find caries in the mastoid cells. There are many men who boast that they open the mastoid, and never find that they have done so too quickly, and they always seem to be able to find disease present. He said that some content themselves by finding pus in the antrum, whereas in 95 per cent. of ordinary purulent otitis media pus could be found in the antrum. This

statement does not place me among the conservatives, for I believe in radicalism in mastoid surgery.

Dr. PHILLIPS (closing the discussion) said that he too would like to emphasize the point referred to by Dr. Dench. One would not be safe in saying that, in mastoid cases, operation was not necessary because there was a free discharge from the middle ear; the most extensive involvement was often found when the pus was welling from the middle ear. Regarding the exploratory incision, he was not yet ready to change his views, nor had Dr. Dench convinced him that his views on this subject were wrong. Even Dr. Dench's statement goes far to prove his contention, for he said that during the past season he had never made such an exploratory operation without finding pus. He had thus really made his diagnosis previous to making his so-called exploratory incision, and in every instance had found pus. He had frankly stated that the operation when done carefully and under proper precautions was without danger. A strong point in favor of opening the cells early was that the hearing results were far better.

He thought that Dr. McAuliffe believed in the abortive treatment more than many others. Some five or ten years ago, at the Manhattan Eye and Ear Hospital, no case was ever operated upon until attempts had been made to abort. Gradually that plan subsided and now the majority of cases are at once taken into the operating room. This was done because most cases had already reached the operating stage before applying for treatment.

Regarding the tip tenderness he did not mean to say that it was not important.

#### **A conservative element in acute mastoid surgery.**

Dr. EDWIN W. PYLE read this paper, detailing an interesting experience respecting a case of acute mastoiditis following scarlet fever. The parents refused operation and under the influence of hot douching the patient made an excellent recovery, 2 years afterwards having a slight tinnitus and a hearing distance of 20". The indications for operation were too pronounced to teach conservatism under similar conditions but illustrate that we don't always know what "might have been." Dr. Pyle's paper was a spirited plea for conservative methods of treatment in acute tympano-mastoiditis. He gave statistics from 25 physicians in general practice throughout the country to show how seldom mastoiditis needs operation. This statement was verified



by his personal experience of 25 years in general practice and 4 years in special work.

The paper was discussed by Drs. Phillips, Dench, Whiting Mayerhof, Wilson, McKernon, and, in reply, by Dr. Pyle.

STATED MEETING, HELD NOVEMBER 13, 1901.

**A new mastoid bandage.**

Dr. GEORGE B. MCAULIFFE : When patients leave the hospital after ordinary mastoid operations have been performed upon them, I have found that they always have an aversion to going out with the white gauze bandage, on account of its conspicuousness. They invariably covered the dressing with a black silk handkerchief. I did not see why a black gauze bandage would not be practicable. Therefore, Seabury and Johnson have made a black gauze bandage which answers all the requirements of the white bandage in its properties as a dressing and is not discolored by any discharge. I know nothing regarding the preparation of this bandage, but I know that, when soaked in water, the color remains fast.

**A new ear syringe.**

Dr. JAMES F. MCKERNON : I wish to present to the Section an aseptic ear syringe, one that can be taken apart and thoroughly sterilized. It has a solid piston. Tieman and Co. are making it now, although it was originally made in Pittsburgh, Penn. Dr. EDWARD B. DENCH : Has it been in use for any length of time? Dr. MCKERNON : About one year and a half. I think the end of the piston can be made lighter by using some other form of metal. Dr. ABRAMS : Is it necessary to use vaseline? Dr. MCKERNON : No lubrication is necessary.

**A case of acute diffuse external otitis.**

Dr. JOSEPH A. KENEFICK : Through the courtesy of Dr. Dench I wish to present to the Section a case of acute diffuse external otitis. This man came to the hospital four weeks ago and said for two weeks previously he had suffered from pain in the ear, due in all probability to an acute purulent process in the middle ear. When he sought relief some proprietary preparation was prescribed for him which contained carbolic acid. Following its use came a diffuse inflammation of the structures of the external canal, closing it completely so that a probe could scarcely be entered. It was impossible to make out whether the tympanic



membranes were affected or not. *Treatment* consisted of irrigation of the parts with a 1:3000 hot solution of bichloride of mercury every three hours, and he has been very faithful in carrying out this treatment. After four weeks of this treatment the drum can be partially seen on one side, but the other canal is still closed. It seemed to be a long time before obtaining a view of the drumheads. I did not resort to any surgical procedure because of the steady but slow disappearance of the swelling. The drums were not affected so far as I know. It is impossible to see them. In these cases they seldom escape.

Dr. J. OSCROFT TANSLEY: What was the nature of the disease?

Dr. KENEFICK: I cannot say, but I think it was the result of the irritation of the carbolic-acid mixture which he introduced into both canals.

*Discussion.*—Dr. M. D. LEDERMAN: A few years ago I reported a case of diffuse external otitis which was the result of the careless use of carbolic acid. The patient had some pain in the ear and a friend advised her to use a douche of carbolic acid, one dram in a little water; this was to be used in both ears. The acid was not thoroughly mixed with the water. As a result, she developed not only a diffuse otitis of the canal and concha but also an œdematous condition of the face, extending to the eye. She probably had a profuse serous discharge that continued for three days—peculiar predisposition for this form of irritation. The woman suffered considerably, for the canal was much swollen. She was treated according to the dry method, and about two weeks after the first application of the remedies the drum was seen and it was noted that the external portion was exfoliated. No middle-ear trouble arose from it. Subgallate of bismuth and one quart of zinc oxide was applied.

Dr. EDWARD B. DENCH: This is one of the few cases of external otitis which cannot be classed as symptomatic. Wiping out the canal shows that there is a superficial infection of the deeper portion of the canal, a comparatively rare condition. So far as my experience goes, diffuse external otitis, with tumefaction in the immediate vicinity of the drum membrane, is almost always indicative of involvement of the mastoid process. In this instance only the soft tissues are involved.

Dr. ROBERT C. MYLES: Was there any perichondritis?

Dr. KENEFICK: Yes. There was not much exfoliation. Since the trouble responded to the irrigation treatment it was kept up.

Dr. MCAULIFFE: Was the patient treated by the douche?

Dr. KENEFICK: Corrosive sublimate solution,  $\frac{1}{3000}$ , was used.

Dr. MCAULIFFE: As this condition seems to me somewhat similar to a chronic dermatitis or chronic eczema I should like to know if such watery treatment would not be contra-indicated.

Dr. KENEFICK: There was pus in the canal at all times and under that treatment the patient did well.

**A case of meningitis from extension of acute purulent otitis media through osteomyelitis of the petrous bone. Operation. Autopsy. Microscopic examination.**

By ARNOLD KNAPP, M.D. Published in full in this number of the ARCHIVES.

*Discussion.*—Dr. EDWARD B. DENCH: I think that we all have listened with a great deal of interest to the paper of Dr. A. Knapp which has certainly attracted the attention of all of us. The symptoms of meningitis, whatever the channel of infection may be, are very apt to be confusing and we all know that any operative interference is, as a rule, of little value. At the same time, I believe, as the writer of the paper has stated, that we should always operate in these cases. I think that Dr. Macewen in twelve cases of beginning meningitis saved fifty per cent.

Dr. Knapp's case reminds me, in some points at least, of a patient who was referred to me by Dr. Booth, of this city. It was reported before the American Otological Society five or six years ago. In this particular instance the man was suffering from a chronic middle-ear suppuration and he suddenly began to have vertigo, severe unilateral headache, and irregular temperature. I was in doubt as to the nature of the trouble. Both drum membranes were entirely destroyed. One ear was practically dry, but upon the side on which the patient complained of the headache, the discharge was quite abundant. The caries in the tympanum had been going on for a long time. I first instituted the ordinary measures of asepsis through the external meatus, *i. e.*, syringing the canal. The patient became worse, running an irregular temperature, from  $100^{\circ}$  to  $104^{\circ}$ , the temperature gradually rising higher and higher. I decided to operate and I entered the middle cranial fossa in the typical manner, after first opening the mastoid antrum. On exposing the dura, at a point one inch above the external auditory meatus, the dura seemed to be normal, but, when it was incised, there gushed out a turbid fluid from the subdural space. This fluid seemed to come from a

small pocket over the posterior surface of the pyramid. The brain substance was punctured without result. On exposing the lateral sinus this was found to be normal. An antiseptic packing was introduced between the dura and the brain substance so as to wall off the area of infection as completely as possible. The patient was returned to bed and made a perfect recovery without any recurrence of the symptoms. To Dr. Booth and myself it seemed like a case of beginning meningitis and which we had taken at an early stage and successfully walled off the inflammatory focus from the general cranial cavity in the same way that in appendicitis the appendix is walled off from the general peritoneal cavity.

I have been very much interested in the paper, which offers a large field for discussion.

Dr. M. D. LEDERMAN : Have listened with much interest to Dr. Knapp's paper because it helps me to account for a fatal termination in a case where there were cerebral complications and yet in which no path of infection could be traced from the mastoid or by continuity through the attic. I can recall two cases of a similar nature which were operated upon and which terminated fatally, with meningeal symptoms, without symptoms pointing to a circumscribed lesion.

The first case was a man who was brought into the hospital with a subacute otitis suppurativa about five o'clock in the evening and I was summoned to operate. The patient was unconscious. He had been treated aseptically in the usual manner by the practitioner under whose observation he was for about six weeks. The man complained of a little tenderness over the mastoid, and he seemed to be doing well, attending to his business as usual. Suddenly that morning he became dizzy and then unconscious. That was all the history obtainable. He was brought to the hospital and operated upon. Extensive mastoid disease was found, particularly at the base and at the antero-superior wall of the antrum. Soft bone and granulation tissue was removed from this region and the dura was found diseased, covered with granulation tissue, and thickened. The dura was incised, and although a slightly discolored fluid escaped no pus could be found. Numerous punctures were made with a small knife into the brain without finding a pus cavity. The man did not rally from the operation and eight hours afterwards he died. An autopsy was refused. This was a case where we probably would have found an

extension of the inflammation through the labyrinth and internal auditory canal.

In another case where the patient suffered from symptoms of a chronic suppurative otitis, the discharge continued in spite of antiseptic treatment and curetting. He had had some dizziness but no particularly marked symptoms except a temperature of 100° F. He was operated upon, but did not improve, complaining of severe frontal pain. The patients with cerebral complications who have been under my care and in whom headache was a prominent symptom, have complained that the pain was most marked in the frontal region near the side of the affected ear. This patient was operated upon, but only disease in the attic was found, together with some granulation tissue in the antrum. Microscopical examination revealed the diplococcus meningitidis from a specimen of the secretion from the dural cavity above the tegmen, but the pathologist remarked that this diplococcus was frequently found in suppurative ears, and had no special significance, though it was present in meningitis. This patient was operated upon a second time, bone being removed along the anterior portion of the wound, but no further disease was found except some turbid fluid, which indicated a meningeal involvement. The patient died and autopsy was refused.

A third case, which fortunately recovered after operative intervention, was under observation for some time without presenting a characteristic clinical picture. The patient had had a suppurative condition, but the drum had healed over, and there were no further evidences of active middle-ear trouble. He complained of a localized pain at the base of the mastoid and at its posterior border. This patient had some elevation of temperature at times without any further symptoms of mastoid involvement except a chilly sensation off and on. He worked in ditches, and so malaria was suspected and the blood examination revealed the plasmodium. Five grains of quinine were injected and the temperature then came down, and for a week the man's improved condition permitted me to feel that he was getting well, though the localized tenderness still persisted. In this case the man owed his life to the use of the ophthalmoscope, as his eyes were examined daily for any evidence of cerebral irritation or pressure. Tortuosity of the retinal vessels was discovered at one of the examinations, so an exploratory operation was decided upon. The antrum contained no pus but some granulation tissue which was removed.

About two drops of pus were found in the cells. Pus was found in the sinus, and thinking this accounted for the symptoms I was about to finish the operation when my probe came upon a soft spot at the superior and posterior part of the antrum; when this was scraped away an epidural abscess was found and drained. The man got well without any further complications. In cases where histories point to cerebral extension without evidence of infection by continuity of tissue at the operative site, we must bear in mind the possibility of such infection by way of the internal ear.

Dr. McKERNON: A case that I saw last April gave about the same history as one of Dr. Lederman's cases, and also somewhat similar to the one referred to by Dr. Dench. The history given me was that the case had been seen by a colleague two days previous. There was a profuse purulent discharge from the external auditory meatus, with a sagging of the posterior-superior canal wall, and marked tenderness over the entire mastoid process, and intense headache on the affected side, with complete absence of hearing also on that side. The temperature was  $104.6^{\circ}$ , pulse 130, and respiration slightly above normal.

Within a few hours after seeing the case he opened the mastoid but found no pus. The external cortex was very thick. The entire mastoid process was removed and free communication established between the antrum and middle ear.

At the request of the operator I saw the patient in consultation twenty-four hours after the operation. The temperature at that time was  $105.2^{\circ}$ , pulse 144, and respirations 36. Cerebration seemed normal, and the patient complained of intense pain all over the affected side. There was a slight purulent discharge in the auditory canal of the affected side. The eyes were examined with negative result. The pain was so intense that he was continually rolling from side to side in the bed.

He was taken to the operating room, and an exploratory operation was performed in order to examine the middle cranial fossa. The dura was found normal; the dura over the cerebellum was then exposed posterior to the sinus, and here also the parts seemed to be normal.

Upon removing a small portion of the bone, lower down over the cerebellum, there was seen to exude from between the dura and inner cortex about a drachm of straw-colored fluid. A probe was passed still farther down between the dura and the bone



covering it, and a small amount of fluid similar in character to that found above oozed out.

The operator did not wish to proceed any farther; the patient was taken to his bed and died some eight hours later without regaining consciousness.

An autopsy was performed a few hours after death and there was found a diffuse leptomeningitis of the base with no extension higher than the upper two thirds of the cerebellum.

I give the history of this case because it was somewhat similar to those already given this evening, but differing in the fact that it did not show any distinct pathological condition in the meninges near the exit of the discharge



REPORT ON THE PROGRESS OF OTOTOLOGY DURING THE SECOND QUARTER OF THE YEAR 1901.

BY DR. A. HARTMANN

Translated by Dr. ARNOLD KNAPP.

ANATOMY AND PHYSIOLOGY.

105. **G. Alexander.** On the development of the ductus endolymphaticus (recessus labyrinthi). *Arch. f. Ohrenhkl.*, vol. lii., p. 18.

106. **Schurygin.** The pupillary reaction on excitation of hearing with tuning-forks. *Russki Medicinski Westnik*, July, 1891.

107. **Nuvoli.** On the theory of hearing. *Arch. italiano di otologia*, vol. xi., No. 3.

108. **Panse.** The organ of equilibrium and hearing of the Japanese dancing mouse. *Münch. med. Wochenschr.*, No. 13, 1901.

109. **Barrago-Ciarella.** On suture of the spinal accessory with the facial in facial paralysis. *Polichlinico*, vol. viii.

110. **Friedmann.** On artificial excitation of the aural labyrinth. *Inaug. Dissert.*, Strassburg, 1901.

105. ALEXANDER has examined the development of the ductus endolymphaticus in serial sections and models of guinea pigs, and believes that this duct, just as Kibel has shown in the chick embryo, is developed from the original area of communication between the horn plate and the labyrinth. The ductus endolymphaticus in the guinea pig and chick is not the homologue of a similarly situated canal described by other authors in the case of a number of vertebrates which develops as an independent prolongation of the labyrinthine vesicle, but is independent of the original region of communication. DENKER.

106. During an examination of the hearing in soldiers the author noted a variation in the size of the pupil on the approach of the vibrating tuning-fork to the ear. In the healthy there is at

first a transient, variable contraction of the pupil, which is followed by a dilatation. This pupillary reaction is well marked in the case of large tuning-forks with 256 to 512 vibrations per second. The high tones with 1024 vibrations produce a very weak reaction. The reaction is present also on testing the bone conduction; usually the homonymous pupil and then the other pupil react. On withdrawing the tuning-fork the pupil on the same side returns to normal before that of the other side. If the ear be deaf the pupillary reaction on the homonymous eye is much weaker and may be absent, while the pupil on the side corresponding to the healthy ear reacts very promptly. This physiological pupillary reaction can be of diagnostic service to discover simulation. The testing of bone conduction is especially important. The loss of the reaction may point to deep-seated disturbance in the central nervous system. The reaction is much more pronounced in neurasthenics, corresponding generally to the condition of the patellar reflex. The reaction occurs most frequently in women and in children, and the examination must in all cases be repeated a number of times. SACHER.

107. NUOLI has carefully gone over Zimmermann's theory of hearing, and refers to his experiments described at the meeting of the Italian Otological Society in Naples, in April, 1900, which show in a simple and convincing manner that the transmission of sound takes place through the drumhead and ossicles. The author questions the correctness of Helmholtz's theory which Zimmermann has adopted, and on the following grounds:

If the vibrations of the radial fibres of the basilar membrane occur through resonance the true formation of sound must take place in the labyrinth, because resonance always produces a sound. If this, however, were the case, it should be evident to the phonendoscope, by which the slightest sound in any part of the body can be heard, or it should be confirmed by the electric current. The original paper of Nuoli is strongly recommended to those interested in this branch, and especially the report of his experiments pertaining to the physiology of the middle ear, which are published in the tenth volume, nos. 1 and 2, of the *Archivio italiani di otologia*. RIMINI.

108. A marked difference between the organ of equilibrium and hearing of the domestic mouse and the dancing mouse does not exist. Rotatory movements are probably of central origin. SCHEIBE.

109. In two experiments on dogs the author united the peripheric end of the divided facial with the central end of the divided spinal accessory. Facial paralysis disappeared in both cases after several months, and there only remained, especially in the second dog, a slight atrophy of the muscles innervated by the facial. In a third experiment the peripheric end of the facial was united to the central end of the divided vagus; the result in this case was also favorable, and the facial paralysis disappeared in eight months.

RIMINI.

110. The author has studied the action of chloroform instillations on the aural labyrinth; other substances were also used, but ammonia was the only one to produce irritation of the aural labyrinth at the beginning. Rabbits, doves, and guinea pigs were experimented upon. In general, Brown-Sequard's results of the action of chloroform on the labyrinth were confirmed, namely: that the animals act just as if the labyrinth had been destroyed. Chloral hydrate does not act like chloroform on the ear, but is inert.

DREYFUSS.

## GENERAL.

## a.—REPORTS AND GENERAL COMMUNICATIONS.

111. **Reinhard.** A rare case of right-sided facial paralysis, stenosis of the external auditory canal, and occlusion of the labyrinth following gun-shot injury. *Arch. f. Ohrenhkl.*, vol. lii., p. 59.

112. **Randall, B. Alexander.** Localization of sound, and its bearing on hearing. *Phila. Med. Journ.*, May 4, 1901.

111. The bullet penetrated the soft parts below the right zygomatic process without injuring the parotid, and had torn through the anterior, lower, and posterior walls of the membranous ear canal at the junction of its external with its middle third, had struck the facial nerve below the stylo-mastoid foramen, and had come out behind the apex of the mastoid process. The permanent results of the injury were deafness, through labyrinthian concussion, paralysis of the muscles of the right half of the face (taste, secretion of saliva, and soft palate normal), stenosis of the auditory canal, and difficulty of mastication.

DENKER.

112. **RANDALL**, in speaking of the attempt made to map the field of hearing in a manner analogous to that of vision, draws attention to the essential difference, that sound-waves are not, like light-waves, propagated only in straight lines. The *absolute* field

of hearing is hardly definable. There should be little if any difficulty in localizing sounds when both ears are in good condition. Not only are they lateralized, but the other factors as to their direction can generally be subconsciously determined. One ear is often given to the sounds engrossing us, while the other merely keeps guard-hearing, in a measure side-tracking those on the busy side which might confuse its task. The condition is very different when one ear must act alone, unaided by its fellow. The physical problem is little changed, and the auditory apparatus receives and transmits to the percipient centres the same range of sounds coming from practically all directions; but the psychic task is far more complex. One side of the brain, to a much greater extent than usual, has to receive and analyze all the impressions, and these lack that element of double yet diverse character which in vision we call stereoscopic. Rotation and other movements of the head can, as in binocular vision, furnish some localizing factors; yet the problem remains too largely a mental one, and the "fatigue of the deaf" is by no means absent in those who, with one perfectly good ear, are often unrecognized by their companions as having any lack. It is time, he thinks, that the value and importance of "binaural hearing" should be better appreciated.

CLEMENS.

b.—GENERAL PATHOLOGY.

113. **Jackson, Chevalier.** An overlooked nasal factor in ear disease. *Jour. Amer. Med. Assoc.*, May 25, 1901.

113. JACKSON believes that the nasal condition which is productive of ear disease consists of hypertrophic thickenings, usually on both sides of the vomer, near the posterior free margin, which deflect the intruding blast of dust-laden, dry, cold air against the Eustachian eminences, resulting in perpetual irritation of the mucous membrane in the vicinity of the tube mouths. This action is entirely independent of any harm such hypertrophies may do in increasing stenosis. The growths are soft, though only slightly erectile. They have been present in 25 % of the writer's private ear cases, and in 11 % of dispensary nose and throat cases. It is not claimed that these thickenings are present in all cases of ear disease, nor is it claimed that ear or tubal troubles are present in every case with these thickenings. Their removal, together with that of posterior turbinal enlargements is advised. Either Bryan's ethmoid curette, Seiss's curette, or a long-shanked, probe-pointed tenotome will do the work satisfactorily.

CLEMENS.

## C.—METHODS OF EXAMINATION AND TREATMENT.

114. **Jürgens.** On the diagnostic value of the rhodan reaction on the saliva in ear disease. *Wojenno-Medicinski Shurnal*, Feb., 1901.

115. **Thies.** On percussion of the mastoid process. *Inaug. Dissert.*, Leipzig, 1901.

116. **Hotz, F. C.** On the use of camphoroxol and menthoxol in diseases of ear. *Annals of Otol., Rhinol., and Laryngol.*, February, 1901.

117. **Kenefick, J. A.** The akouphone and its limitations. *N. Y. Med. News*, April 13, 1901.

118. **Ellett, E. C.** Anæsthesia of the ear-drum. *Four. Amer. Med. Assoc.*, April 27, 1901.

114. Disease of the ear seems to influence the functions of the neighboring organs, as, for instance, that of the salivary glands. The condition of the innervation of the latter exerts a great influence on the quantitative and qualitative condition of the saliva. The human parotid normally secretes potassium rhodan and sodium rhodan, which may be absent from the saliva in disturbances of the innervation of the gland. JÜRGENS found the rhodan reaction to be absent in chronic purulent otorrhœa. In one-sided otorrhœa the rhodan reaction may be positive, because the parotid on the healthy side furnishes potassium rhodan to the saliva. The author has, therefore, endeavored to collect the saliva from each parotid separately. In inflammations of the parotid, occlusions of Stenson's duct, the rhodan reaction is of course wanting in the saliva. Many cases are added to show the diagnostic importance of the rhodan reaction. Unfortunately this reaction is influenced by certain medicaments.

SACHER.

115. After experiments on the macerated skull of the cadaver and on the living, THIES comes to the following conclusions: The percussion note produced over the mastoid process depends upon the vibrations of the entire skull. Central osteitis, just as osteitis of the mastoid process, without inflammation of the cortex at the area of percussion, may fail to produce dulness in the absence of secondary changes in the soft parts. Dulness is to be regarded simply as dulness of the soft tissues, and may occur normally as well as pathologically.

BRÜHL.

116. These new remedies are combinations of peroxide of hydrogen and alcohol with camphor or menthol; they are of great deodorizing power, non-irritating, and very stable. HOTZ was induced to try these "oxols" through an opinion expressed by Stetter of Königsberg, who had used them successfully in



stubborn cases of chronic otorrhœa where other remedies had failed. Although the number of his trials is too small to draw any definite conclusions as to their value, he nevertheless feels that the results justify making more extended tests with them. Being non-irritating, they may be used in the early stages of infectious otitis and perhaps often arrest further extension of the inflammation. Their main field of usefulness, however, is in the tympanic cavity, although they may prove as valuable in the after treatment of mastoid operations and in certain affections of the external meatus. In one case of *aspergillus niger* a complete disappearance of the mould occurred in three days, and it has not returned up to the present time.

CLEMENS.

117. In considering the various forms of deafness which are benefited by mechanical contrivances, KENEFICK limits the usefulness of the akouphone to that class where there has been disease involving but not wholly destroying the labyrinthine nerve terminals—deaf-mutes. In his opinion this instrument has attained a greater degree of success in teaching deaf-mutes not only inflection of the voice but articulate speech than ever before achieved. The instrument is still in a crude state.

CLEMENS.

118. In order to accomplish complete anæsthesia of the eardrum which will permit of a painless paracentesis, ELLETT advocates the use of equal parts of cocain, carbolic acid, and menthol. He has been most successful in allaying pain. In one case a double paracentesis was performed without the slightest suffering. The mixture is used in the following way: After cleansing and drying the canal, the mixture is applied on a cotton-tipped applicator directly to that part of the drum which is to be incised. The surface of the drum becomes white, thereby enabling the operator to confine his incision to the parts anæsthetized.

CLEMENS.

d.—DEAF-MUTISM.

119. **Eschweiler.** The pathology and hearing power of the deaf-mute ear. *Gesellsch. f. Natur. u. Heilkunde zu Bonn*, June 17, 1901.

120. **Kumberg.** A case of hysterical deafness. *Wratsch*, No. 19, 1901.

121. **Carroll, J. J.** Pathology of deaf-mutism. *Journal of Eye, Ear, and Throat Diseases*, March and April, 1901.

119. The author reviews the pathological changes which have been found up to the present time in the ears of deaf-mutes, and Bezold's tests for hearing. The correlation of the results of the



functional examination and the pathological findings is still deficient. In partial hearing it should be possible to demonstrate a partial disease of the sound-receiving organ. HARTMANN.

120. The condition developed very characteristically in a soldier suddenly after a psychical and bodily injury. In addition to the deaf-mutism several motor and sensory disturbances were present, which appeared suddenly and disappeared without trace. The deafness lasted four weeks, the loss of speech, about eight weeks. There was complete recovery. SACHER.

121. From a careful analysis of the one hundred and fifty autopsies on deaf-mutes collected and reported by Saint-Hilaire CARROLL shows that the pathology of deaf-mutism varies greatly; that all the anatomical alterations of the ear which are capable of producing grave deafness have been found in deaf-mutes; that no one organic lesion has been constantly present; and that, according to the present state of our knowledge, there is no single definite pathological condition which is characteristic of the disease. A plea is made for more thorough study of the pathological specimens obtained from such autopsies. CLEMENS.

#### EXTERNAL EAR.

122. **Dombrowski.** A case of cartilaginous tumor in both ear lobules after perforation. *Feshenedelnik*, No. 15, 1901.

123. **Grosskopff.** The inflammations of the external ear. *Klin. Vorträge* (Haug's), vol. iv., 6, 1901.

124. **Radzich.** A case of complete occlusion of the bony auditory canal by a bony diaphragm. *Medicinski Obozrenje*, April, 1901.

125. **Tommasi.** A case of primary diphtheria of the external auditory canal. *Annali di laringologia e d'otologia*, ii., No. 2.

126. **Nezzi.** A case of sarcoma of the external auditory canal. *Bolletino delle malattie dell'orecchio naso e gola*, xix., No. 9.

127. **Grossmann.** A pulsating cicatrix of the drumhead. *Berliner klin. Wochenschr.*, No. 24, 1901.

128. **Lau.** The healing of old perforations of the drumhead. *St. Petersburger med. Wochenschr.*, No. 29, 1901.

122. After perforation of the lobules in a girl of six, cartilaginous growths appeared on the posterior surfaces. In six weeks the one on the left ear had attained the size of a small nut, that on the right the size of a pea. The tumors were hard and round and easily removed. SACHER.

123. This is a description of circumscribed and diffused otitis externa. The author treats the beginning of otitis externa with

this ointment: liquor alumini acetici, 2; lanolin, olive aa. 9: In advanced cases a free incision under narcosis is recommended.

BRÜHL.

124. The author feels compelled to regard the formation of the bony diaphragm as the result of a chronic otorrhœa from which the patient was suffering.

SACHER.

125. This case is regarded by the author as an undoubted one of primary diphtheria of the external auditory canal, as, in addition to the typical otoscopic picture and microscopic examination, the source of infection was known. A girl, eleven years of age, was taken ill with severe earache, high fever, and malaise, four days after she had introduced into the ear a pen-holder belonging to another girl whose sister was suffering from diphtheria. The lymph nodes in the neck and aural region became swollen and typical diphtheritic membrane appeared in the ear canal. Anti-diphtheritic serum was injected twice and the child recovered on the seventh day. The ear canal was perfectly free from membrane and dry.

RIMINI.

126. After a brief review of the literature the author describes a case of a boy of ten who suffered from chronic purulent otitis after measles. A tumor was removed from the external auditory canal which had occluded the lumen. Two months later the discharge had ceased but the tumor had recurred at its original site. Radical operation was refused and the tumor was again removed, only to recur after a few months. The report of the histological examination showed the tumor to be a sarcoma originating primarily in the auditory canal. The malignancy of the growth was confirmed by the histological examination and the tendency to recur after the otorrhœa had ceased.

RIMINI.

127. The cicatrix in the drum showed an arhythmical pulsating reflex. There was some congestion in the eye grounds. The cause was a compression of the carotid by a right-sided thyroid tumor with secondary cardiac hypertrophy.

BRÜHL.

128. A case cured by treatment with trichloracetic acid used according to Okuneff. About two thirds of the drum were missing, the part below and back of the manubrium of the malleus. The diluted acid was applied once a week, the treatment lasting a year and a half. The new-formed scar tissue was gray, shiny, and not different from the normal drum.

SACHER.

## MIDDLE EAR.

## a.—ACUTE OTITIS MEDIA.

129. **Bezold.** Further observations on excrescences of the drumhead in acute purulent otitis media; their treatment and pathology. *Arch. f. Ohrenhkl.*, vol. li., p. 299.

130. **Cagnola.** Purpura rheumatica, a complication of an infection of otitic origin. *Ann. di laring. ed otol.*, ii., No. 2.

131. **Barrago-Ciarella.** A case of acute otitis caused by the blastomycetes. *Ann. di otologia, rinologia*, vol. ii., No. 1.

132. **Bar.** Facial paralysis in a case of acute catarrh of the middle ear. *Bulletins de la soc. franc. d'otologie, etc.* Congrès de 1900.

133. **Bochner.** Treatment of acute purulent otitis. *Inaug. Dissert.* Leipzig, 1901.

134. **Nemtschenkow.** Treatment of otitis media and its complications. *Belwitschnaja Gaseta Botkina*, 10 and 11, 1901.

129. BEZOLD refers to Grünwald and his publications which have preceded Katz's paper on perforating excrescences of the drumhead. According to Bezold, these excrescences occur when suppuration is of a protracted course, associated with violent inflammatory conditions, as is especially the case in influenza, and when there is a narrow perforation opening into the posterior upper quadrant. The protruding mass, which at first is composed of the hypertrophied mucous layer of the drum, becomes associated later with involvement of the thick connective-tissue layer of the cutis. The macroscopic characteristic feature of the growth is the centrally situated perforation. The lining epithelium of the canal is not a continuation of the mucous epithelium but is formed by the external epidermis. Pathologically the excrescence is similar to a granulating hypertrophy occurring in the presence of a fistula. Bezold regards it as unnecessary to distinguish between the bare perforating hypertrophies and those covered with epidermis. As regards treatment, the protruding mass should be removed from the posterior and upper quadrant with a snare, and a large counter-opening should be made to ensure better drainage. Amongst 1131 cases of acute purulent otitis Bezold observed and operated upon 69 perforating excrescences. The occurrence is consequently a more frequent one than Katz has stated, who found this condition to be present in only 6 cases out of 200.

DENKER.

130. The patient, thirty-five years of age, suffered from acute purulent otitis media and a month later with typical mastoiditis,

Small hemorrhagic areas, varying in size from the size of a pin-head to that of a lentil, appeared on both lower extremities and the arms. The malleolar region was slightly swollen on both sides. The mastoid process was opened and the diseased bone and granulations removed. The wound healed after a protracted course. Ten days after their appearance the hemorrhagic spots disappeared, leaving traces of a yellowish-green color. This case is interesting not only from the rarity of purpura as a complication of otitis but also in the investigation of the probable connection. CAGNOLA believes the purpura in this case to be connected with the pyæmic condition in which the patient was, basing this view on the fact that articular rheumatism and purpura rheumatica are occasionally preceded by acute angina.

RIMINI.

131. According to the author this is the first case of acute middle-ear disease to be described where a serous exudate, obtained under the strictest antiseptic precautions by paracentesis of the drum membrane, gave rise to a growth of blastomycetes, in pure cultures on bouillon and gelatine media. The fungus was very similar to the blastomycetes lithogenes.

RIMINI.

132. Facial paralyses in cases of acute purulent middle-ear disease are not rare and usually recover rapidly after paracentesis. The author has observed two cases of recovery; in a third case, a patient with arthritic symptoms, the facial paralysis persisted notwithstanding the spontaneous perforation of the drum and profuse otorrhœa. The mastoid was opened and the horizontal portion of the Fallopian canal was exposed. The walls were found to be roughened in broad carious bands and covered with fungoid granulations. This area was carefully curetted and the facial paralysis disappeared in 14 days. The author draws attention to the fact that in otitic facial paralysis, just as in other peripheric facial paralysis, a more or less well-pronounced lagophthalmus is present, while the soft palate on the same side is not paralyzed. This is not in accordance with the view of Lermoyez, who thinks it is probable that the soft palate is innervated not by the facial but by the vago-spinalis. In this case of BAR the tongue deviated to the side opposite the facial paralysis, which is only produced by central lesions affecting the hypoglossal nerve. This deviation of the tongue the author is unable to explain, as anastomosis between the facial and the hypoglossal nerves is not known to exist. The possible anastomosis of the facial with the

lingual and the naso-pharyngeal may here come in question. Paracusis was also present in this patient, explicable by the interference with the function of the stapedius muscle, also disturbances of the sense of taste and of the salivary secretion. The author recommends in case of facial paralysis where the inflammatory infection of the walls of the Fallopian canal can be assumed to be present, a carefully performed surgical exposure.

SCHWENDT.

133. This paper is a plea for the dry treatment of acute purulent otitis.

BRÜHL.

134. The author does not believe in the dry treatment nor in the irrigation of the ear with large quantities of fluid. To cleanse the ear he employs a mixture of equal parts of alcohol and distilled water to which 2 per cent. of carbolic acid is added. Ten to 15 drops of this fluid are carefully introduced into the ear on a pledget of cotton which is allowed to remain in place for two or three minutes. The author has succeeded in curing otorrhœa of many years' standing by this method. If this treatment is insufficient and the suppuration depends upon some deep-seated changes in the ear, a 5 per cent. watery solution of carbolic acid is injected into the bony part of the auditory canal. The auricle is held forward and the needle of the aspirating syringe is introduced into the upper margin, passed along the posterior and superior wall of the cartilaginous canal as deep into the bony canal and the middle ear as possible. In adults an entire syringe-full is injected. The dangers of intoxication need not be considered. After the injection of a 5 per cent. carbolic acid solution a marked diminution of all inflammatory symptoms takes place. The pain and discharge are diminished and disappear after twelve days. Should this not be the case a second injection is needed. More than three injections need not be made. The author has treated 36 cases, 9 acute and 27 chronic, after this method with the best results.

SACHER.

*b.*—CHRONIC PURULENT OTITIS.

135. **Hecht.** Hot-air treatment in chronic purulent otitis. *Münch. med. Wochenschr.*, 1901, No. 24.

136. **Görke.** Pathological examination of aural polypi. *Arch. f. Ohrenhkl.*, vol. lii., p. 63.

137. **Biehl.** A small contribution to the surgery of the middle-ear. *Arch. f. Ohrenhkl.*, vol. lii., p. 23.



138. **Grossmann.** The influence of the radical operation on hearing. *Arch. f. Ohrenhkl.*, vol. lii., p. 28.

139. **Stucky, J. A.** Ossiculectomy for chronic suppurative otitis media. *New York Medical Journal*, May 25, 1901.

135. A metal canula is attached to a hot-air apparatus such as is used in the treatment of lupus, and the air is transmitted directly into the tympanic cavity. The author believes he has had benefit from the employment of this method in a number of cases.

SCHEIBE.

136. **GÖRKE** divides aural polypi—which means growths of inflammatory origin only—into the two fundamental varieties, granulation tumors and mucous polypi. The structure of an aural polyp consequently should reveal the histological peculiarity of granulation tissue or that of inflammatory hyperplastic middle-ear mucous membrane. In the progressive process of the tissue growth of new formations the connective-tissue alterations of the epithelium are first described. Solitary follicles have been observed in aural polypi, but glands have only been seen in mucous polypi. As the evidence of retrogressive metamorphosis, necrosis, pigment metamorphosis, fatty, hydropic, mucoid, and hyaline degenerations, calcification, ossification, cystic degeneration, and central cholesteatomatous formation were observed. The latter is supposed to be peculiar to aural polypi. Hair was found present in three cases, foreign bodies, gauze fibres in one, and dermatol powder in another.<sup>1</sup>

DENKER.

137. **BIEHL** reports on an operative case of cholesteatoma of the aditus with perforation of Shrapnell's membrane and well-preserved hearing. Instead of seeking for the antrum during the operation the author made the lateral wall of the attic his objective point by removing in thin layers the posterior wall of the auditory canal down to a ridge sufficient to serve as a support for the drum. Four weeks later the ear was completely dry and the hearing had improved for the whispered voice from four to eleven metres. The author regards as advantages for this method the fact that the sinus is not injured and the dura not exposed, and the drum membrane and ossicles are retained.

The reviewer would like to point out that also in the radical operation of Zaufal and Stacke the drum membrane and ossicles can be very well retained and that the danger of injury to the

<sup>1</sup> The investigations of Bezold, Scheibe, Grünwald, and Katz on the histology of aural polypi are not recorded in the literature.—*Reviewer.*

sinus cannot be excluded in all cases. He would prefer to expose the antrum and the aditus according to Zaufal and Stacke, with preservation of the drum and ossicles.

DENKER.

138. The ear was tested before the operation and after healing had taken place, with the whispered voice and with high ( $c'$  and  $f'$ ) and low (C and A) tuning-forks. In the four cases where the ossicles were retained the hearing power was very much improved in two, in one it remained the same, and in the fourth it became worse (luxation of the hammer-anvil joint). In the 32 ears of the 16 patients operated on both sides, in 31.3% the hearing was improved after the operation; in 28.1% it was poorer, and in 40.6% it remained the same. In 180 one-sided operations, the hearing was improved in 46.1%; it was poorer in 23.3%, and remained stationary in 30.6%. In general, therefore, the percentage of deterioration of hearing in Lucæ's clinic is higher than according to the statements of Stacke, Grunert, and Schwartze. The results agree with the figures of Trautman-Stenger, where the hearing was improved in 36.2%; deteriorated in 29%, and stationary in 34.8%. In nine cases the hearing power for whisper increased from 7.5 to 11.5 metres. The greatest improvement was found in those cases where the ossicles were not preserved.

Trautman's statement that improvement of hearing after radical operation depended upon the thinness of the epidermis covering the operative cavity could not be confirmed. The greatest deterioration was in one case, 10.25 metres. The greatest differences in the hearing before and after operation occurred in young individuals. The author comes to the following conclusions which in particular are at variance with the observations made at the Halle Clinic:

(1) In case of intact labyrinth improvement in hearing is to be expected by operation in 48.5%, especially when the deafness was considerable before the operation. (2) The hearing remains stationary or may become worse in not an infrequent number of cases, namely, in 20.2% to 31.3%. (3) In those cases where the functional examination before the operation has shown disease of the inner ear, the hearing has most frequently remained unaffected by operation, namely, in 45.6%. (4) In a considerable number, 38.8%, of cases belonging to this category, a decided improvement of the hearing often takes place. (5) The possibility of diminution of hearing power is most improbable (15.3%).

DENKER.

139. As the entire anatomical arrangement of the middle-ear favors the development of pathological conditions, the main object in cases of chronic suppuration is to secure uninterrupted drainage. The ossicles were removed in twenty-nine cases, the stapes in two cases with results justifying the operation, and in none had the disease existed less than seven years. The line of treatment is: After the removal of the ossicles and the necrotic tissue, the anterior attic wall is removed, which gives very free drainage. This method is considered conservative and satisfactory and should be preferred to the radical operation, at least as a first resort.

CLEMENS.

#### C.—CEREBRAL COMPLICATIONS.

140. **Preysing.** Nine brain abscesses in ear and nose disease. *Arch. f. Ohrenhkl.*, vol. li., p. 262.

141. **Bertelmann.** A healed case of otitic meningitis. *Deutsche med. Wochenschr.*, No. 18, 1901.

142. **Hegener.** On acute serous meningitis. *Münch. med. Wochenschr.*, No. 16, 1901.

143. **Hölscher.** An unusual case of extensive sinus disease after middle-ear suppuration. *Arch. f. Ohrenhkl.*, vol. li., p. 110.

144. **Hölscher.** Is the possible insufficiency of a healthy internal jugular vein a contraindication to ligature of the diseased vein in otitic thrombosis of the sigmoid sinus? *Ibid.*

145. **Hölscher.** A modified method of operating for otitic thrombosis of the sigmoid sinus. *Ibid.*

146. **Piff.** Operations on the mastoid in complications of acute otitis, with report of seventy-five operative cases. *Arch. f. Ohrenhkl.*, vol. li., p. 241.

147. **Vierick.** Ligature of the jugular vein in the operative treatment of the transverse sinus. *Inaug. Dissert.*, Leipzig, 1901.

148. **Holmes, Bayard.** A case of antrum infection and sigmoid sinus thrombosis without present middle-ear disease, presenting the symptoms of facial neuralgia and none of the ordinary symptoms of disease in the pars petrosa: retropharyngeal gravity abscess, general sinus thrombosis without much impairment of cerebration; death after three months; partial autopsy; presentation of specimens. *Amer. Med.*, June 1, 1901.

149. **Duel, Arthur B.** Acute otitis media and acute mastoiditis in scarlet fever, measles, and diphtheria. *Med. Rev. of Rev.*, Mar. 25, 1901.

150. **Roosa, D. B. St. John.** A case of cerebellar abscess, the result of chronic suppuration of the middle-ear. *Post-Grad. Med. Journ.*, Apr., 1901.

151. **Dufour, Clarence R.** Infective sigmoid sinus thrombosis. *N. Y. Med. Journ.*, Mar. 23, 1901.

152. **Keiper, George F.** Some points in operating for mastoiditis. *Med. and Surg. Monitor*, Indianapolis, Ind., May 15, 1901.

153. **Randall, B. Alexander.** Notes on fifty operations for otitic extradural abscess. *Univ. of Penn. Med. Bull.*, Apr., 1901.

140. PREVSING reports on two healed and two unhealed abscesses of the temporal lobe; on two healed and two fatal cases of cerebellar abscess, and on one abscess of the frontal lobe in nose disease. The author insists upon performing the operation for otitic brain abscess of the temporal lobe from the roof of the tympanum and antrum, and believes that in most cases after removal of this roof, the dura will be found affected at one place which indicates the way to the abscess.

In the first case there was a large abscess in the temporal lobe and thrombosis of the transverse sinus without symptoms. The abscess was as large as a hen's egg and was opened through the tegmen, and the transverse sinus was incised for a distance of about 3 *cm* from the knee down.

In the second case, a large temporal-lobe abscess was discovered over the tegmen. This abscess was situated quite far back, and after its evacuation the patient suddenly developed amnesic symptoms characterized by a complete obliteration of all topographical names (countries, cities, streets). This symptom soon disappeared and is explained by the author as the result of nutritive changes following the sudden evacuation of the abscess. The first case was encapsulated and without symptoms. The second appeared to be quite recent, without a capsule, and was accompanied by a pronounced slowness of the pulse and by septic fever.

The author regards the various kinds of brain abscess as simply stages in the same process of varying intensity.

As regards aspiratory puncture, it is necessary to go directly upward through the tegmen, and not inward.

The third case of temporal lobe abscess with fever after chronic otorrhœa succumbed to a meningitis of the ventricles. The fourth case likewise terminated fatally, running an afebrile course, after a chronic otorrhœa, and was not diagnosticated because the meningeal symptoms preponderated. At autopsy a left-sided temporal-lobe abscess with perforation into the ventricle was discovered.

In the cerebellar abscesses, the first ran an afebrile course with sinus thrombosis and abscess of the soft parts. After completion of the radical operation, a second operation was performed where granulations were removed from part of the left cerebellar hemisphere with scissors. The case recovered. During the entire course there was no fever, no reduction of pulse, no vertigo, only headache. The author thinks that the sinus thrombosis occurred

first, with the abscess as a secondary lesion. In the second case, the cerebellar abscess, with fever, slow pulse, vertigo, stupor, nystagmus, and increased patellar reflex, was cured by trephining the posterior cranial fossa and evacuating the abscess.

In the second unhealed case of cerebellar abscess, the disease was not diagnosticated. Preysing related the course of a fatal case of left-sided frontal-lobe abscess after empyema of the left antrum of Highmore, frontal and ethmoid sinuses. Considerations of the origin of brain abscess after infection of the nose and ear follow. The peculiar relation which the lymph channels and the blood-vessels have to one another in the brain is commented upon. As the blood-vessels are situated in the lymph channels as in a sheath, the rapid extension of disease and the rapid disintegration of large parts of the white substance are apparent. The abscess makes a halt at the cortex because the cortex is supplied by blood- and lymph-vessels of the pia, and the larger blood- and lymph-vessels of the pia are situated exclusively in the white substance.

DENKER.

141. This is a case of extradural abscess which recovered after evacuation of the pus and resection of the diseased bone, middle-ear spaces, with a transient facial paralysis. The diagnosis of meningitis was made because, before the operation, there were rigidity of the neck, high fever with free sensorium and normal eye-grounds, and because the fluid obtained from a lumbar puncture, performed during narcosis, was clouded, containing leucocytes and diplococci situated extracellularly.

NOLTENIUS.

142. Case I. Chronic middle-ear suppuration with large perforation in the back. Voice at 75 *cm*. Pain in the head and ear, vertigo, vomiting, retarded pulse, subnormal temperature, optic neuritis, tenderness on percussion over the squama. At the radical operation granulations were found in the middle-ear cavities, caries of the facial canal, discoloration of the tegmen tympani and of the overlying dura. Incision in the cerebrum and cerebellum evacuated a clear cerebro-spinal fluid which was discharged in enormous quantities during the ensuing eight days. Recovery.

Case II. Chronic middle-ear suppuration. Swelling of mastoid process and in the canal; deafness, headache, vertigo, vomiting. At operation cholesteatoma and destruction of the lateral wall of the horizontal semicircular canal were found. Exposed sinus was normal. Five days after the operation, fever set in, slow pulse,



apathy, hyperæsthesia, twitchings of the face and arm on same side. On incision of the cerebrum and cerebellum, clear cerebro-spinal fluid escaped and continued to discharge in large quantities. Optic neuritis appeared later and then disappeared. Recovery took place with return of some hearing. HEGENER leaves it undecided whether this was a case of serous meningitis or not.

SCHEIBE.

143. This was a case of right-sided cholesteatoma of the middle-ear from which a thrombosis of both transverse sinuses and the longitudinal sinus, the large vein of Galen, the petrosal sinus, and the left cavernous sinus developed. At autopsy, in addition, an abscess as large as a hen's egg, was found on the left occipital lobe, purulent meningitis at the base and pneumonic patches. The patient was operated on five times under narcosis. First the radical operation followed by exposure and evacuation of a purulent thrombosed transverse sinus two days later. This, according to the author, would better have been done at the first operation, as the patient had had two chills with high fever. The jugular vein was previously ligated. After the second operation the condition improved. Twelve days later the temperature began to go up, and three weeks after the second a third operation was undertaken but had to be interrupted on account of profuse hemorrhage from the soft parts of the skull. Two days later the bone was removed in a backward direction, the sinus incised, and pus evacuated. General condition again improved; no headache. Fever persisted and headache returned in three days. Another operation took place. A large piece of bone was removed down and out. On introducing a probe beneath the dura, pus appeared. The dura was incised. On the following day there was pain in the occiput and neck and tenderness over the spinous processes of the vertebræ. Puncture of the cerebellum negative. Two days later, general convulsions, but especially of the right side. Repeated punctures of the right cerebrum, negative. Two days later, death.

DENKER.

144. Linser has observed two fatal cases after one-sided ligation of the jugular and emphasizes that one-sided ligation of the jugular vein in the presence of insufficient development of the other vein may produce death from cerebral œdema. HÖLSCHER denies this statement and claims that a brain which has recovered from the occlusion of a thrombosed sinus without injury, cannot further be injured by ligature of the jugular vein. DENKER.

145. The author recommends the following procedure to prevent the extension from a diseased sinus in a backward direction, and to insure incision of the sinus in bloodless condition. The sinus is exposed, not only downward but also 2 *cm* back of the knee. The incision begins at the posterior end of the wound in the healthy sinus, continues downward and forward, the bleeding behind the beginning of the incision being arrested by a tampon pressed upon the outer sinus wall. The author has employed this method with success.

DENKER.

146. Of the three additional fatal cases, the first succumbed to a diffuse purulent meningitis and a secondary thrombosis of both cavernous sinuses. The infection extended from the original focus along the diseased osseous veins to the posterior surface of the petrous bone, where a purulent pachymeningitis developed which led to general meningitis. In the second case, death resulted, probably from uræmia. The third case was that of a boy thirteen years old, where facial erysipelas after deep cervical abscess had produced middle-ear suppuration with a fatal meningitis and sinus thrombosis by extension along the middle meningeal vessels. The article concludes with the statement of the indication for operation to date, the condition before operation, the course and length of treatment, and the hearing before and after operation of all of the 75 cases.

DENKER.

147. VIERICK, after a review of the literature based on a series of cases operated on at the Leipzig Clinic, considers ligature of the jugular vein to be without danger, and that this ligature should precede sinus operation. Of 40 cases treated with ligature, 15 per cent. died. In 30 per cent. after ligature, metastases were formed. In 54 treated without ligature, 24 per cent. died; in 49.4 per cent., metastases developed.

BRÜHL.

148. A brief synopsis of this instructive case is as follows: The patient had never suffered from any disease except gout and rheumatism. After light exercise he complained of chilliness, which developed later into a severe rigor lasting over an hour, followed by a temperature of 104° F. Headache occurred in forty-eight hours over the whole right side of the head and grew excruciating; severe neuralgia of the fifth nerve was present in addition for five days. A retropharyngeal abscess on the right side developed which was opened and drained. The mastoids were separately examined and the ear-drums inspected with negative results. Transillumination of the accessory sinuses showed

nothing abnormal. Without any warning, and without any discoverable local disease, a discharge of at least two drachms of dark pus came from the right ear, relieving the head symptoms very much. Paralysis of the right leg developed shortly after this, and was followed by a convulsion. An exploratory cranial operation discovered nothing definite. Death from exhaustion. *Autopsy*: Skull-cap adherent over longitudinal sinus; sinus filled with a septic clot. Blood-vessels of the dura and pia were thrombosed over at least 6 cm of the upper surface of the left hemisphere nearest the longitudinal sinus. Both lateral and both sigmoid sinuses were filled with pus and broken-down clots. No disease of the external auditory canal, but the petrous portion of the temporal bone was honeycombed. The analysis distinctly points to a forgotten early middle-ear suppuration, the antrum being the primary focus of infection.

CLEMENS.

149. From clinical observation and a careful study of more than 6000 cases of acute infectious disease, it is found that the development of acute purulent otitis media occurs in scarlet fever in about the proportion of one case in five, in diphtheria about one case in ten, and in measles about one case in twenty. In purulent otitis complicating scarlet fever, the discharge is usually, although not always, delayed until the second or third week, after the acute febrile stage has passed. Its development is then suggested by a sharp rise in temperature, which is a symptom of greater regularity and significance than pain. The otitis of diphtheria seems to be less severe than that of scarlet fever, but more severe than measles. Inflammation of the tympanum is more likely to occur during the acute febrile stage of diphtheria and measles, a sudden rise of two or three degrees above the usual temperature suggesting this complication. A combination of measles with diphtheria or scarlet fever always increases the danger, nearly one half of such cases developing a violent double otitis which frequently invades the mastoid cells in spite of vigorous efforts to arrest its advance.

In children under five a post-auricular swelling due to an escape of pus through the Rivinian fissure has been the invariable rule. In children up to ten years of age it is not uncommon to find a post-auricular swelling due in older ones to a perforated cortex. Post-auricular swelling in cases over twelve years is more likely to be due to inflammation in the external auditory canal than to mastoiditis. In all cases a sagging of the

posterior superior segment of the external auditory canal wall was invariably present.

CLEMENS.

150. The patient, male, aged twenty-three, suffered from purulent otitis media in the left ear since childhood. Mastoid tenderness and pain down the neck developed for the first time several weeks prior to coming under observation. A mastoidectomy showed the external table to be very thin, the cells slightly carious, and containing considerable pus. Three days after the mastoid operation, double vision of the homonymous variety developed, the right eye becoming almost paralyzed. An investigation of the wound was determined upon. The sigmoid sinus was exposed but not aspirated, and no pus was found coming from a deep source. Six days later pus was seen oozing from an opening in the bone. This sinus was investigated at another operation and was found to lead to an abscess cavity which was opened up and thoroughly drained. Meningitis developed four hours after, and the case died in twenty-four hours.

*Autopsy.*—Dura slightly injected but not adherent to brain surface at any point. No evidences of any bone necrosis nor of dural inflammation. On the under surface of the left lateral lobe of the cerebellum a circular opening was found which led to a small cavity containing exudate, whether purulent or due to breaking-down of the softened tissue is not known.

CLEMENS.

151. The symptoms, diagnosis, pathology, and treatment of infective sigmoid thrombosis due to extension of middle-ear suppuration are most carefully described by DUFOUR in this paper. He believes that chronic suppurative otitis media is more liable to cause intracranial complications through the impaired resistance of the tissues and destruction of the accessory cavities than acute suppurative otitis media, since in the latter class of cases the periosteum acts as a protection against bacterial invasion, further aided by the leucocytes destroying the action of the microorganisms. As to the question whether the antrum or sinus should be first operated upon, the symptoms should be the guide; yet, as the infection is due to extension of middle-ear suppuration, he believes that the antrum should be opened first and thoroughly cleaned out.

CLEMENS.

152. In describing the usual technique in mastoid operations, the writer has discarded gowns and aprons which render the operator overwarm, and advises the substitution of a sterilized linen suit with canvas slippers and a sterile cap for the usual outer

clothing worn at such times. The incision should be free and as close to the auricle as possible. The periosteum should be carefully cut through, lifted from the field of operation, and accurately replaced over the raw bone surface. He expresses his partiality for the trephine to make a good start, and prefers the one-half-inch Galt instrument. Sterilized sponging will do away with the necessity of irrigation, which has some disadvantages. The cranial cavity and the lateral sinus should be inspected under strict asepsis to be sure of their non-involvement. CLEMENS.

153. In his concluding remarks, RANDALL says that in acute as in chronic cases very extensive intracranial penetration of pus can be present with minimum symptoms; and this not only in those patients with an extra-thick mastoid cortex, which hinders ready breaking outward of the empyema, but in some in whom the yielding of this part of the bone has been exceptionally quick. Free incision of the soft parts may be reserved for the cases with fluctuation; it should then be employed as a step to the duly thorough exploration of the bony structures, without which the surgeon leaves himself in needless darkness as to the real condition and dangers of his patient. The antrum should be freely opened in the acute cases; *all* of the tympanic cavities in the chronic, not only for drainage, but for full inspection of the walls; and every portion of diseased or decidedly suspicious bone curetted away. If this should lead the operator through the inner table to the dura, instead of shrinking from such intervention he should follow the clue without any hesitation. Extradural abscess well evacuated is wonderfully harmless, but it is the cause of many of the most serious or fatal of the intracranial extensions of tympanic suppurations. CLEMENS.

#### d.—OTHER MIDDLE-EAR AFFECTIONS.

154. **Jacobson.** Treatment of dry middle-ear affections, especially with the pressure probe. *Klin. Vorträge* (Haub's), vol. iv., 5, 1901.

155. **Dunn, John.** A case of severe mastoid neuralgia. *Virginia Semi-Monthly*, April 12, 1901.

154. JACOBSON gives a historic survey of the development of treatment with the pressure probe. He is still of the same opinion as in 1890 regarding the value of the pressure probe in treating the symptoms produced by dry middle-ear affections. He is in favor of the old hand probe and prefers it in cases where the air douche alone is unsuccessful. If the hearing is not improved



after applying the pressure probe, the use of the catheter is immediately resorted to. If this also fails, Jacobson employs pneumomassage and precedes it either with the air douche or the pressure probe.

BRÜHL.

155. Of the five cases reported, the most interesting is the following: Three separate and distinct attacks of pain developed in the mastoid and surrounding region as a result of taking cold, and in none of these attacks did any inflammation of the mastoid or middle-ear show itself. The mastoid pain grew more severe at each subsequent attack. Examination of the nose and throat threw no light on the case. After six months of suffering, the pain subsided somewhat, only to return with any exposure or whenever the patient took cold. The mastoid was not only spontaneously the source of pain, but under pressure excessively sensitive, especially over the middle third, which was more sensitive than either the region of the fossa or the tip. The temperature, which for the first three or four days was slightly above normal, became subnormal for five days, reaching as low as  $96\frac{1}{2}^{\circ}$  F. The pulse was good. The administration of salicylate of soda, on the supposition of the rheumatic diathesis playing the exciting factor in the case, controlled the pain for a short time, but later it was without effect. The pain now became so severe that a mastoid operation was determined upon.

The cells were found to contain nothing but air; those of the upper and lower thirds of the process were normal in color; those occupying the middle third were markedly injected. This injected area corresponded with the sensitive area on pressure. Nowhere was there any visible exudate to be found. The wound was sutured and healed by first intention. The neuralgia disappeared with the operation.

CLEMENS.

#### NERVOUS APPARATUS.

156. **Hammerschlag.** Rheumatic affections of the auditory-nerve apparatus. *Arch. f. Ohrenhkk.*, vol. lii., p. 1.

157. **Spira.** On concussion of the labyrinth. *Klin. Vorträge* (Haub's), vol. lii., p. 1.

156. The author has been able to collect twelve cases from literature and reports on two personal observations of rheumatic affection of the auditory-nerve apparatus. He believes that in this disease the auditory nerve is injured by the refrigeratory poison which may in one case be irreparable, causing permanent damage

to the ear and functions of the semicircular apparatus, and in other cases may disappear completely. The reason for the varying intensity of the injury, as well as for the localization of the pathologic changes, is as yet unknown. DENKER.

157. With due consideration for anatomic and physiologic observations, SPIRA describes those functional disturbances of the labyrinth in which neither macroscopically nor microscopically anatomical changes can be demonstrated, and where we have to expect a purely functional alteration as explanation. He believes that the true cause of these changes is an alteration in the constructions of the neurons. Diagnosis and treatment are extensively dwelt upon and should be read in the original. Spira recognizes great value in hearing exercises. BRÜHL.

#### NOSE AND NASO-PHARYNX.

##### a.—METHODS OF EXAMINATION AND TREATMENT.

158. **Baurowicz.** Lysol for disinfection and to prevent clouding of laryngeal mirrors. *Arch. f. Laryngol.*, xi.

159. **Ostmann.** The use of the galvano-cautery in the nose as a preparatory step to intranasal operations. *Deutsche med. Wochenschr.*, No. 14, 1901.

160. **Lichtwitz.** The treatment of several nasal disorders with hot air. *Ann. des maladies de l'oreille.*, etc., April, 1901.

161. **Menier.** Hot-air treatment in general and in particular in rhinology. *Bordeaux*, Cadoret, 1901.

162. **Mayer, Emil.** Clinical experience with adrenalin. *Philad. Med. Jour.*, April 27, 1901.

163. **Goldstein, M. A.** A new technique for the reduction of turbinal hypertrophies. *The Laryngoscope*, May, 1901.

164. **Ingals, Fletcher.** Notes on adrenalin and adrenalin chlorid. *Jour. Amer. Med. Assoc.*, April 27, 1901.

158. The method of Ruprecht of immersing mirrors in 0.5 % lysol solution to prevent their clouding has been found of value by the author. In place of lysol, a solution of bacillol, 0.25 to 1.00 %, is used. Disinfection is best obtained by boiling.

ZARNIKO.

159. In operations on the septum and turbinals to prevent hemorrhage and subsequent packing, OSTMANN draws furrows with the galvano-cautery burner behind and above the operative area. This is supposed to obliterate the descending vessels, and can be used in removing hypertrophied ends of turbinates, the entire turbinates, cartilaginous and bony spurs, as well as in treating hemorrhage from the anterior parts of the septum.

NOLTENIUS.

160. The introduction of hot, dry air, from 70-90°, into the nasal cavity by the apparatus of Lermoyez-Mahu modified by LICHTWITZ is followed with good results in vasomotor coryza and acute hypertrophic rhinitis. In five to ten sittings of three minutes' duration a permanent cure is obtained. The author has not observed a single complication in 180 sittings. BRÜHL.

161. The advantages of this method for rhinology are demonstrated by the case histories of thirty-two patients from Lichtwitz's clinic. This author has also had favorable results. BRÜHL.

162. Adrenalin is the isolated blood-pressure-raising principle of the suprarenal gland, isolated by Dr. Jokichi Takamine in five different crystalline forms. In solutions of from 1:1000 it blanches the nasal mucous membrane in a few seconds. The impurities occurring in solutions disappear upon the addition of a small amount of chloretone. Adrenalin was used as a hæmostatic, also in operations, for the relief of nasal congestion, as a diagnostic aid, and in acute vasomotor rhinitis, with good result. M. TOEPLITZ.

163. After arguing the different methods of reduction, such as turbinotomy, partial or complete, by saw, scissors, snare, or spoke-shave; the cautery, both chemical and electric; the use of astringents and caustics by swab and spray, GOLDSTEIN advocates a modification of Pierce's submucous cauterization with chromic acid, introduced through a trocar as far as the bone parallel to the turbinate. M. TOEPLITZ.

164. Adrenalin chlorid in solutions of from 1:5000 is of great value in the treatment of acute inflammatory affections of the nose, in those of from 1:1000 for the throat and epistaxis. It is used in a spray. M. TOEPLITZ.

b.—GENERAL SYMPTOMATOLOGY AND PATHOLOGY.

165. **Gorschkow.** On the localization of the sense of smell in the cerebral cortex. *Obosrenje psichiatricii*, Jan., 1901.

166. **Suarez de Mendoza.** A case of nasal vertigo cured by bilateral removal of a septum spur. *Arch. de méd. et de chir. spéciales*, July, 1901.

167. **Flatau.** Prophylaxis in diseases of the throat and nose. Nobeling-Flatau, *Handbuch der Prophylaxe*, Abth. vii.

165. The author has in general been able to confirm the results of previous investigators. The centre of smell lies in the gyrus hippocampus and uncinatus posterior; the cornu ammonis

appears to be but little involved. Faradic irritation of this area produces a distinct reflex in the shape of contraction of the corresponding nostril. This area has nothing to do with the centre for taste.

SACHER.

166. The patient, thirty-two years of age, suffered from influenza after otitis five years ago. The otitis was cured. Severe attacks of vertigo remained, which set in whenever the patient took cold. Quinine, the bromides, and iodine were without effect. Examination showed the mucous membrane of the nasal turbinals to be hyperæmic and hypertrophied. Application of boric acid, menthol, and cocaine caused the vertigo to nearly disappear. Removal of the spurs was followed by cure.

HARTMANN.

167. The author describes the general prophylaxis of speech and prophylaxis as regards the nose and throat in acute infectious diseases and in hemorrhages.

BRÜHL.

C.—OZÆNA.

168. **Pasmanik.** On the pathogenesis of ozæna. *Revue médicale de la suisse romande*, No. 4, 1901.

168. The various theories of this action are fully discussed. There are at present two opposing views, the one of Zaufal-Hopmann, the other of Loewenberg-Abel-Strübing. The former depends upon congenital predisposition from peculiar anatomical relations, and the latter, on the action of pathogenic organisms. According to the author, a combination of both theories explains all the conditions of the disease. Kaiser in Breslau has confirmed the views of Zaufal-Hopmann, inasmuch as he has demonstrated by measurements the presence of platyrrhinia and brachyprosopia in ozæna patients. Siebenmann and his pupils have come to the same conclusions. In 20 ozæna patients of different nationalities, examined by the author, 15 were found to be platyrrhinic. In these the ozæna was most pronounced and had appeared in earliest youth. In a family all of the sons resembling the father were platyrrhinic and suffered from ozæna, while the daughters, resembling the leptorrhinic mother, were healthy. The metaplasia of the mucous epithelium, first demonstrated by Schuchardt, occurs most frequently in platyrrhinic noses. There are, however, unquestionably, cases of severe ozæna where there is no platyrrhinia. The treatment should occur generally between the second and eighth years; at

that time there is some prospect of a result, and the occurrence of a foetid odor may be prevented. Treatment can do nothing for the atrophy of the mucous membrane with the loss of smell.

SCHWENDT.

d.—NEW GROWTHS.

169 **Barrago-Ciarelli.** On mucous polyps of the septum. *Giornale Internazionale della Sc. mediche*, Anno xxii.

170. **Treitel.** On distension of the bony nose by benign nasal polypi. *Arch. f. Laryng.*, xii.

169. This very complete article contains a history of the pathology, etiology, and symptomatology of mucous polyps of the nasal septum, which, according to the author, occur very rarely. He personally observed and operated on a case, with complete histological description.

RIMINI.

170. A description of a case where a great number of nasal polypi produced an unusual distension of the nasal cavities. According to the author, this probably took place between the sixth and fifteenth years, during which time the bony nasal framework grows most. These cases are not so rare as they are considered. The reviewer has seen a number; one in particular was associated with a combined empyema of the accessory cavities. Gerber has described a number of similar cases.

ZARNIKO.

e.—ACCESSORY SINUSES.

171. **Panse.** A case of tuberculosis of the maxillary and sphenoidal sinuses. *Arch. f. Laryng.*, xi.

171. At operation tuberculous masses were found in the maxillary antrum, frontal, ethmoidal, and sphenoidal sinuses. At autopsy, tuberculosis of the ethmoid and anterior sphenoid were found present. The roof of the sphenoidal cavity was intact.

ZARNIKO.

f.—OTHER DISEASES OF THE NOSE.

172. **Delie.** Lupus of the nose. *Bulletin de la Soc. belge d'otologie*, etc. fifth year, No. 1.

173. **Lewy.** A striking condition of the nerves in the nasal mucous membrane in nasal reflex neuroses. *Arch. f. Laryng.*, xii.

174. **Spiess.** A new viewpoint in treatment of acute coryza. *Arch. f. Laryng.*, xii.

175. **Gerber.** On the upper respiratory passages and the occurrence of the lepra bacillus. *Arch. f. Laryng.*, xii.

176. **Booth, Burton S.** A combined intranasal and extranasal operation for the correction of a congenital concave vertical and lateral deformity of the nose. *N. Y. Med. Journ.*, April 27, 1901.



177. **Roe, John O.** The correction of the deviations of the nasal septum with special reference to the use of the author's fenestrated comminuting forceps. *N. Y. Med. Journ.*, April 13, 1901.

178. **Freudenthal, W.** Primary chancre of the septum of the nose. *N. Y. Med. Journ.*, May 11, 1901.

172. Lupus of the nose occurs in two forms, the lupus erythematosus, whose tubercular nature is not established, and the tuberculous lupus vulgaris. After a brief anatomical description, an unusually complete critique of the general and local treatment follows. The latter consists principally in mechanical destruction of the lupus nodules with curette, scarification, galvano- and thermo- cautery, chemical destruction by various salves, Elsenger's parachlorophenol and pyrogallie acid. Finsen's phototherapy and treatment by the X-ray, the electric treatment, Hollander's hot-air treatment, treatment with subcutaneous injections of anti-toxines and other medicaments, and surgical radical treatment are discussed. A large number of illustrations furnished by Prof. Finsen confirm the curative action of his treatment. A number of photographs from the clinic of Dr. de Nobele show the results of the X-rays. The latter treatment has this advantage over Finsen's, that a larger area can be treated at a time; photo-therapy, however, is painless. Up to the present both forms of treatment are inapplicable to the nose. According to Hollander's method, air heated to 300° is blown from a tube over the diseased area. The advantage of this is that any part of the body can be reached. The treatment is somewhat tedious and the pain occasioned requires the use of an anæsthetic. Injection of Koch's tuberculin nowadays serves only for purposes of diagnosis. Of the various subcutaneous injections, that of calomel seems to be the only one which has caused a complete cure. This procedure can be readily combined with any of the other treatments. Surgical treatment by excision, suture, plastic operations, and transplantation of skin, is especially suitable in circumscribed affections and has the advantage of rapid healing; but destroyed nasal mucous membrane cannot be restored by any plastic operation. The subsequent atrophy of transplanted skin flaps in addition to the trophic changes following these operations are unfavorable.

SCHWENDT.

173. The author has examined histologically two pieces of mucous membrane from two patients suffering from distinct nasal neurosis. The presence of nerve fibres was looked for and he

believes that he found an unusual quantity of nerve fibres situated beneath the mucous surface. After study of the illustrations this view does not seem conclusive to the reviewer. It is necessary to control these findings with other examinations.

ZARNIKO.

174. The author believes that the general aim of treatment in acute coryza is to reduce the reflex instability of the nasal and pharyngeal mucous membranes. For this purpose he recommends the administration of salicyl and antipyrin and the insufflation of orthoform into the nose several times a day until the discomfort and the secretion cease.

ZARNIKO.

175. This extensive article is divided into three parts. In the first, the history of lepra is considered, with special regard to its occurrence in the upper air passages. Among other things it is stated that over 200 years ago the supposition was pronounced that the primary seat of the lepra infection was the nasal mucous membrane. The second part gives the histories of eight cases of lepra observed by the author, with excellent and accurate illustrations. The author then presents a very readable picture of lepra in the nose, throat, and lungs. The last part reports pathological examinations regarding the infectiousness and tendency to spread of lepra. Most of the bacilli were found in the nasal secretion, which is supposed to be immediately destroyed in the handkerchiefs used.

ZARNIKO.

176. The operation for deviated septum is, on principle, the same as that devised by Ash, only the incisions are made with bistouri and saw, and with cocaine and suprarenal extract; for plugging tannic acid gauze is used in addition to the splint. The saddle-shaped deformity is corrected under an anæsthetic by an incision extending from the glabella to the nasal tip, by detachment and elevation of the nasal bones, and by packing the nostril. A suture is then carried around the parts by means of a curved needle armed with catgut, making a circuitous course and passing along either side and once across the dorsum and is tied to fill in the depression; the incision is closed by subcutaneous stitches.

M. TOEPLITZ.

177. ROE incises the septum obliquely, vertically, or horizontally, and in two of these directions combined, without piercing the mucous membrane of the concave side. He then uses his fenestrated forceps, which also breaks the osseous attachment,

and finally introduces sterilized cotton or gauze around a small metal plate as a support in the previously occluded side.

M. TOEPLITZ.

178. The lesion occurred in a physician who, owing to dryness of the nose, was used to pick it, and had thus infected the septum after a vaginal examination of a syphilitic patient. It started as a small ulceration on the right side of the septum and was not at first recognized as specific, until all the glands from the frontal bone down the neck on both sides had become involved and the edges of the ulcer were quite elevated.

M. TOEPLITZ.

g.—NASO-PHARYNX.

179. **Fischenich.** Syphilis of the naso-pharynx. *Arch. f. Laryng.*, vol. xii.

180. **Touton.** Remarks on the preceding article. *Arch. f. Laryng.*, vol. xii.

181. **Hellat.** Three cases of naso-pharyngeal tumors. *St. Petersburg med. Wochenschr.*, 1901, No. 30.

182. **Holmes, Christian R.** Accidents attending adenoid operations. *The Laryngoscope*, May, 1901.

183. **Shurly, E. C.** Remarks on the after-effects of operations for the removal of adenoid tissue at the vault of the pharynx. *Jour. Amer. Med. Assoc.*, May 11, 1901.

179. In 235 cases of syphilis in the ear, nose, and throat, the nose was involved in 82, and of these 82 the naso-pharynx in 49. In these 49 cases of naso-pharyngeal syphilis, this organ alone was diseased in 14, in the other 35 there were other evidences of the disease. The author has never observed primary infection, and secondary symptoms but once. In other cases tertiary symptoms were always present.

The greatest number occurred in the first six years after infection, the earliest after two or three months, and the latest after twenty-two years. The author is opposed to the view of some clinicians and thinks that naso-pharyngeal syphilis presents a precise clinical picture. He finds that severe pain of unusual persistence and severity is also present in the neck, interfering greatly with the nutrition of the patient. Severe headache, intense pressure in the entire head, stupor, and sometimes pain in the ears, enormous discharge, disturbance of digestion from swallowing the discharge, with consequent weakness and occasional fœtor, are other symptoms. To ensure exact diagnosis, a pharyn-

geal mirror is employed. Treatment does not consist only of mercury combined with iodine, but careful local treatment is indicated. Cleansing of the surface of the ulcers and insufflation of equal parts of calomel and orthoform, with the application of a mixture of iodine, potassium iodide, and glycerine, are used. Forty-nine case histories are given. ZARNIKO.

180. The author speaks of the importance of the technique of the pharyngeal examination for dermatologists in order that they may not overlook pharyngeal syphilis. Patients with naso-pharyngeal syphilis belong to the most thankful class. Treatment is not only general but local. ZARNIKO.

181. CASE 1.—Cyst of the naso-pharynx in a middle-aged woman, on the posterior surface of the soft palate at a point contiguous to the lateral wall of the choana. The tumor was as large as a plum, of blue color, with a smooth surface. On attempting to remove the mass with a cold snare through the nose, the capsule ruptured and serous fluid escaped. Capsule retracted. Complete healing.

CASE 2.—Cystic degeneration of Luschka's tonsil in a patient forty-three years old, with obstructive rhinitis. Posterior rhinoscopy revealed on the pharynx two distended tumors the size of cherries. These were removed with adenoid curette. The rhinitis and chronic eczema of the lip ceased after the operation.

CASE 3.—Carcinoma of the naso-pharynx. A flat tumor with small lobules like granulations, hard, easily bleeding, occupied the entire posterior wall. At the operation with Hartmann's adenotome, profuse hemorrhage. Tumor shortly recurred. In the course of the disease bilateral compression of the recurrent laryngeal occurred; first the left then the right vocal cord was paralyzed. Shortly after, paralysis of the superior laryngeal nerves followed; death ensued after six months. SACHER.

182. During an operation for the removal of adenoids in a child, aged eight, performed under chloroform, the sharp portion of a Gottstein curette broke off in the vault of the pharynx at the first stroke. The end of the blade, terminating in a sharp hook-like process, was pressed into the flesh of the index finger and then quickly dragged over the soft palate. In another child, five years old, operated without an anæsthetic, the broken-off piece,  $\frac{1}{2}$  in. long and  $\frac{1}{8}$  in. wide, was swallowed, but three days later passed through the rectum without any discomfort.

M. TOEPLITZ.

183. The untoward effects of removal of adenoids may be classified as immediate: Hemorrhage, only in hemophilia; injury to pharynx; reactionary inflammation affecting the pharynx, larynx, tonsils, ear, and accessory cavities; sepsis; and as remote: Erysipelas and peritonsillitis; regrowth of adenoids will occur even after the most thorough removal.

M. TOEPLITZ.

#### SOFT PALATE, PHARYNX, AND BUCCAL CAVITY.

184. **Hallat.** Streptotrix tonsillitis. *Jeshenedelnik*, 1901, Nos. 18 and 19.

185. **Manges, Morris.** Typhoid fever and pharyngeal diphtheria. *American Medicine*, June 1, 1901.

186. **Goodale, J. L.** Pathology of the so-called neurotic inflammations of the mouth. *Annals of Otol., Rhin., and Laryng.*, May, 1901.

187. **Keshner, Moses.** A case of membranous angina, due to streptococci, followed by paralysis of the soft palate. *Medical Record*, June 1, 1901.

184. According to the investigations of the author, tonsillar concretions consist of pure cultures of a fungus, probably of the leptothrix order. These should not therefore be regarded as completely indifferent structures. They cause local irritation and a number of reflex symptoms in organs situated about the tonsils. Characteristic of this disease is its intermittent course and distinct improvement after removal of the concretions. The best treatment is incision of the crypts containing the concretions. In obstinate cases, amputation of the tonsil is indicated.

SACHER.

185. **MANGES** confirms, from four fully reported cases of his own experience, the views of older clinicians of the occurrence of true diphtheria associated with typhoid fever by the presence of Klebs-Loeffler bacilli and the good effect of antitoxine, except in one case which was fatal. He also describes oval pharyngeal ulcers which appear during the early stages of the disease, symmetrically on the anterior pillars of the fauces. M. TOEPLITZ.

186. **GOODALE** groups the so-called neurotic inflammations of the mouth under the following divisions: 1. Herpes zoster. 2. Herpes buccalis and lingualis, herpes facialis, erythema exsudativum multiforme or bullosum. 3. Erythema nodosum, purpura rheumatica. 4. Stomatitis neurotica chronica of Jacobi. 5. Dermatitis herpetiformis of Duhring (of doubtful position). 6. Pemphigus,—which he examines critically from the literature and studies from his own cases.

M. TOEPLITZ.



187. The patient, æt. twenty, a female, presented the tonsils, uvula, and anterior and posterior pillars of the fauces covered with a thick, dirty, yellowish-gray, tenacious membrane. A smear from the same showed short-chained streptococci, but no Klebs-Loeffler bacilli. A culture on blood serum produced almost a pure growth of streptococci. The symptoms were of local diphtheria and systematic infection with maniacal delirium lasting three days. The membrane disappeared on the fourth day; on the fifth, paralysis of the soft palate occurred, which began to improve only after several weeks.

M. TOEPLITZ.

## BOOK NOTICES.

**VI.—The Accessory Sinuses of the Nose, their Surgical Anatomy, and the Diagnosis and Treatment of their Inflammatory Affections.** By A. LOGAN TURNER, M.D. Published by W. Green & Son, Edinburgh, 1901. Pp. 211. Price, 12s. *net*.

This is the first book on the accessory sinuses by an English author. Dr. Turner, in addition to his own original researches along certain lines pertaining to this subject, has had the advantage of having the unusually valuable anatomical material for which Edinburgh is noted, at his disposal. The anatomical part, comprising the greater half of the book, is admirable; the subject-matter is lucidly written and illustrated by forty excellent full-page plates. The outer wall of the nasal cavities is first described, then each sinus is taken up separately. Due attention is paid to the surgically important anatomical peculiarities and to topographical relations. The next chapter treats of the communication between the sinuses and the nose and the methods of probing. Considerable space is devoted to the comparative anatomy of the frontal sinus in man. The author has examined the frontal sinuses in 578 skulls belonging to various races, chiefly by aid of transillumination, and furnishes very interesting comparative figures. In 27.1 per cent. one or both sinuses were absent; the septum occupied the mesial plane in 77 per cent. The subject of transillumination in sinus disease is treated quite exhaustively. In maxillary disease the author, agreeing with most clinicians, regards the test as only corroborative, while in suppuration of the frontal sinuses as of little aid in diagnosis but useful to outline the cavity, as suggested by Kuhnt, which is of considerable value in the question of external operation. The final chapters of the book are devoted to the clinical part of the subject, treating of the etiology, pathology, diagnosis, and treatment. This part gives a more or less accurate and concise idea of our present knowledge of the clinique of the accessory-sinus suppurations.

At the same time, it may perhaps be said that this part is a little too brief, especially if compared with the anatomical part, a fault, if such it may be called, which will surely be remedied with successive editions. We cannot abstain from complimenting the author and thanking him in the name of all English-speaking students for furnishing the means to become acquainted with the intricate and important anatomy of the accessory nasal cavities, for which our text-books on anatomy or rhinology can be searched in vain. A. K.

**VII.—Manual of the Diseases of the Ear.** By THOMAS BARR, M.D. Third Edition. Published by J. Maclehose & Sons, Glasgow, 1901. Pages 241.

Dr. Barr's deservedly popular manual has reached a third edition. Among the changes we find that the chapters dealing with the consequences of purulent disease of the middle ear and their operative treatment have been considerably enlarged to keep pace with the better interpretation of these diseases and the constantly improving methods of treatment.

The book continues to be one of the best in line, handy and yet complete. A. K.

**VIII.—Diseases of the Nose and Throat.** By F. DE H. HALL and H. TILLEY. Second Edition, 1901. Published by H. K. Lewis, London, and P. Blakiston's Son & Co., Philadelphia. Pages, 605. Price, \$2.75.

This, the second edition of this work, has been enlarged by fifty pages and the subject-matter brought up to date. The description of the methods of examination precedes a complete clinical picture of the various affections of the nose, pharynx, and larynx. Diseases of the accessory sinuses occupy an important part of the book and have received considerable attention at the hands of the authors, one of whose names is associated with the advancement of our knowledge of this interesting group of affections. The book can be heartily recommended as a guide to students and will be found of service to all workers in these special lines. A. K.

**IX.—International Directory of Laryngologists and Otologists.** Compiled by RICHARD LAKE. Second Edition. London: Rebman, Limited, 1901. Price, 5s.

The directory, in its new form, has been considerably enlarged, and many of the errors occurring in the names and addresses, especially of the German, have been corrected. The book serves many useful purposes to specialists. A. K.

**X.—Surgical Anatomy and Operative Surgery of the Middle Ear.** By A. BROCA, Professor of Surgery in Paris. Translated by M. YEARSLEY, F.R.C.S. London: Rebman, Limited. 1901. Pages 62. Price, \$1.00 net.

The first part of this monograph gives a description of the external form and structure of the temporal bone, antrum, aditus ad antrum, attic, and their topographical relations. The second part deals with operative procedures in the following four main groups: 1. Simple opening of the mastoid. The author recommends in all cases first to locate the antrum by making an opening of 1 *cm* square with the chisel at about a centimetre behind the upper part of the meatus and then to expose all communicating cells. No mention is made of the importance of removing the mastoid tip in certain cases. 2. Opening the mastoid and tympanum. A description of the usual, so-called radical operation. The retro-auricular wound is kept open, the membranous canal is divided up and back into the concha, and the gauze dressings are introduced through both openings. It is not stated when the posterior wound should be allowed to close, or whether a permanent fistula should be left. 3. Stacke operation. 4 and 5. A summary and rather cursory description of the operations for the more usual intracranial complications. The author is a great advocate of the Stacke protector and mentions its use in both simple and radical operations.

The remainder of the book is styled "The Atlas," and comprises two parts. In the first the relations of the middle-ear cavities are illustrated by drawings of sections through the temporal bone with text. The drawings are from photographs, but unfortunately not very clear. In the second part the various steps of the usual operations are illustrated by diagrammatic drawings.

A. K.

**XI.—A Treatise on the Diseases of the Ear, including the Anatomy and Physiology of the Organ, together with the Treatment of the Affections of the Nose and Pharynx which Conduce to Aural Disease.** By T. MARK HOVELL, F.R.C.S. Edinburgh, M.R.C.S. England, Aural Surgeon to the London Hospital. Second edition. Philadelphia: P. Blakiston's Son & Co., 1901 (printed in Great Britain). Price \$5.50.

The anatomico-physiological introduction occupies 68 pages, with 20 illustrations in the text, clear and neat, but all borrowed. The

anatomy and physiology of the inner ear occupies, with 2 figures, pp. 648-667.

This is a most carefully prepared and very well gotten-up text-book, entering into the minutiae of daily practice in such detail of description and advice as if a painstaking and experienced teacher stood behind the reader guiding his hand and giving the reasons for his precepts. At some places the rules stated would seem superfluous for a pupil of average mental capacity—for instance in Chapter VI. on syringing the ear (p. 147): "The patient should hold the bowl or trough in such a manner as to prevent the fluid from running down the neck and wetting his clothes." Yet it is a small fault to be too explicit. This punctiliousness is a feature of the whole book and, no doubt, any aural surgeon that reads it will receive many a useful point for his practice.

In perusing the book there are many remarks, derived from the author's practice, which deserve to be carefully considered. For instance, the remarks on the removal of adenoids and tonsils, p. 309, etc.: An anæsthetic should always be given, as the author is of opinion that the operation cannot be thoroughly done whilst the patient is conscious, and as in most cases it is necessary to snare off the posterior extremity of each inferior turbinated body. For several years the author has systematically taken away these enlarged extremities, for he had noticed that nasal obstruction frequently remained, although all the adenoid growth had been carefully removed. Further examination showed the prevalence of enlargement of the posterior extremity of the inferior turbinated body, and led to the practice of its systematic removal. The different chapters of Hovell's treatise are carefully written, with the evident and successful endeavor to present everything useful with such accuracy and clearness as to enable the reader to diagnosticate, prescribe, and operate understandingly even in those affections with which he is not very familiar. The intracranial complications of acute and chronic tympano-mastoid suppurations are perhaps not sufficiently described.

As a whole Hovell's text-book is a reliable guide for study and reference for the conscientious aural practitioner, and as such it will command and hold a large circle of readers. H. K.



## Obituary.

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HERMANN STEINBRÜGGE.

In August, 1901, **Hermann Steinbrügge** succumbed to pulmonary disease of many years' standing. In him otology has lost a worthy investigator, these ARCHIVES a zealous collaborator, and many colleagues a true friend. His work in otology belongs to his mature years, so that his scientific papers from the beginning were finished and clear in conception.

Born in Hamburg, 1831, he graduated in Heidelberg, 1854. After eighteen years of general practice in his native city, he was forced to move to the milder climate of Madeira, on account of poor health. He returned in 1876, and, unable to continue the exigencies of general practice, he devoted himself to the study of otology under the guidance of Moos. Together with the latter he published a number of excellent papers, especially on subjects relating to the pathology of the ear. He became a lecturer in the Heidelberg University in 1881, and four years later in Giessen, where he was the first to give an independent course on otology. He was soon after elected extraordinary professor, and the ear clinic, started by his private means, was taken over by the State. In 1898 his professorship became official and salaried.

Almost all of Steinbrügge's contributions have appeared in these ARCHIVES. He wrote the chapter on the pathology of the ear in Orth's text-book, which is an unusually clear and complete review of the subject, based to a great extent on original work. In 1895 he published, together with Niessen, an atlas, entitled *Pictures of the Human Vestibule*.

His life was replete with trouble and work, but the work was a pleasure to him, and his achievements insure him an honorable memory.

O. KÖRNER.

Dr. **Friedrich Semeleder** died October 1, 1901, at Cordova, in the State of Vera Cruz, Mexico. As a friend of Czermak, he studied and practised laryngology and rhinology in Vienna, as one of the first after the invention of the laryngoscope. As early as in the year 1860 he published papers "On the Examination of the Naso-pharyngeal Cavity," and "On Rhinoscopy." His name was best known through the monograph: *Rhinoscopy and its Value in Medical Practice*, Leipzig, 1862, with illustrations of rhinological conditions considered exemplary even to-day.

Semeleder accompanied Emperor Maximilian as his physician-in-ordinary and chief medical officer of the Austrian Volunteer Corps to Mexico, and remained there until his death.

HARTMANN.

Dr. **Adolf Fick**, Professor of Physiology at Würzburg, Germany, died August 21, 1901, aged seventy-two years. He was a gifted man, well trained, especially in natural philosophy and mathematics, of the school of Helmholtz, Brücke, DuBois-Reymond, and C. Ludwig; he succeeded the latter in the chair of Physiology at the University of Zurich, where the present writer, as a student, had the advantage of his closer acquaintance. He was a witty and very amiable companion. He gave particular attention to the anatomy and physiology of the higher senses. In 1856 he published his *Medical Physics*, in 1860 his *Compendium of Physiology, Including Embryology*, in 1864 his *Treatise of the Anatomy and Physiology of the Organs of Special Sense*. Besides the larger works, he published a number of papers on original investigations. All his works were distinguished by definite, scientific, and practical results, elegant demonstration, and attractive presentation.

H. K.

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#### MISCELLANEOUS NOTES.

The city of DORTMUND, Rhine-Province, Prussia, has established a department for Ear, Nose, and Throat Diseases, with an adequate equipment as to a special operative theatre, bathrooms, etc., and twenty beds, eight of which are for private patients. Dr. **Hansberg** has been appointed surgeon-in-charge.

Privatdocent Dr. **Leutert**, of Königsberg, late assistant of Professor Schwartz, has been appointed Extraordinary Professor and Surgeon in Charge of the Otological Clinic at the University of Giessen, to succeed the late Professor Steinbrügge.

Dr. **Kümmel** in Breslau, well known to our readers through his excellent contributions to otology, has declined a call to the chair of otology of the University of Strasburg, to succeed the late Professor Kuhn.

Dr. **Hegner**, Assistant of Professor Passow, has been appointed Privatdocent of Otology at the University of Heidelberg.

Dr. **Hinsberg**, who has distinguished himself by some very excellent papers (for instance on the Diagnosis and Treatment of Otitic Meningitis, in this volume, p. 96, and on Suppurations of the Labyrinth, in the forthcoming number of the German Edition of these ARCHIVES), has settled in Breslau as Privatdocent at the University for Ear, Nose, and Throat Diseases.

The **VIIth International Otological Congress**, which was to be held at Bordeaux in 1902, has been postponed. The exact date will be made known later.

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